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COMPUTERWORLD

SPECIAL REPORT
THE FUTURE OF MPP AND SMP
Following page 72

'Terminator' to ease LAN broadcast storms

By Steve Moore

LAN managers weary of network-crippling broadcast storms soon will be able to doff their foul-weather gear thanks to an emerging class of applications that can detect — and automatically dispel — incipient floods of broadcast packets.

The first such application, NetStorm Terminator from UB Networks, Inc. in Santa Clara, Calif., will debut this week at Networld/Interop '95 in Las Vegas.

Sources close to the company said the initial version of NetStorm Terminator will ensure calm weather on Ethernet LANs managed by UB Networks' Access/Empower distributed hub management system. A Token Ring version will follow later this year.

Terminator, *page 12*



Storm warning
Broadcast storms occur when faulty hardware or misconfigured software floods a network with data packets that rapidly deplete bandwidth and processing resources.

RAM gap opens

By William Brandel and Jaikumar Vijayan

For Frank Tobias, the advent of Microsoft Corp.'s Windows 95 is the stuff of dreams — and nightmares, too.

As the technical support manager at Osteonics, Inc. in Allendale, N.J., Tobias is keenly interested in many of the features in Microsoft's upcoming 32-bit operating system. And like many other information systems managers, he is wrestling with the upgrade issues that must be surmounted for his company's 400 desktop machines.

Microsoft Windows 95

For many users, Windows 95 will open up a RAM gap.

Most users today have only 4M bytes of RAM on their desktops. To exploit the new applications and features that will run on Windows 95 — and to gain the promised performance increases — many customers will need to triple or even quadruple their base memory configuration.

"To bring everyone up to 8M bytes of RAM at our site would take me six months," said Brian Lawrence, PC support manager at Sigma-Diagnostics in St. Louis.

How much is enough?

While Microsoft officials have said users will need only 4M bytes of RAM to run Windows 95, they have acknowledged that up to 12M bytes of RAM will likely be required to comfortably run the new operating system and Microsoft's Office for Windows 95 application suite. Several users and analysts last week said 12M bytes of RAM may even be understating the case.

RAM gap, *page 16*

Host, PC help desks merge

By Craig Stedman
LAS VEGAS

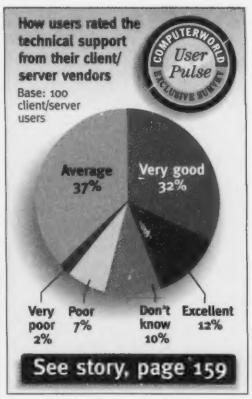
When PC users call their help desks, the last people they might expect to find are mainframe systems operators. But at some companies, such surprises are no longer just a case of misdialing.

Looking to make the uneasy coexistence of mainframes and client/server systems more comfortable for end users, a growing number of information systems departments are melding their customer service functions into a single help desk staffed by employees with cross-platform training.

As desktop systems proliferated, help desks were created to handle PC and LAN issues. Meanwhile, users reporting mainframe-related problems were often routed directly to the data center, where operations personnel took the calls and helped out as time allowed.

But that approach is missing the mark as shops become more mixed, according to a half-dozen attendees at last week's Association for Computer Operations Management conference here. A

Help desks, *page 159*



Computers trip up tax man

By Gary H. Anthes
WASHINGTON



The Internal Revenue Service is increasingly using computers as a weapon against tax fraud, but there is some unfortunate fallout from the computer-aided crackdown this year.

One result has been a delay in delivering refunds to millions of taxpayers. Another has been a marked slowdown in the pace of electronic filing of returns at a time when the IRS needs more electronic business to meet its tax systems modernization goals.

Last week, the IRS reported that the number of returns filed electronically by individuals this year has plummeted 19% from the same period last year (see chart, page 28). In contrast, electronic filing grew 17% between 1993 and 1994.

The decline has raised concerns that the IRS may not be able to move substantially to electronic filing, something it is counting on

IRS, *page 28*

Disaster recovery

Risk mounts for mission-critical data

By Thomas Hoffman

If your company is like most, you're probably in for a rude awakening should disaster strike.

As information technology has shifted from the glass house to departmental business units, mission-critical applications have been rolled out in droves over client/server networks.

Yet most companies have failed to set up contingency plans to recover the loss of distributed data. Tari Schreider, a partner at Contingency Planning Research, Inc. in White Plains, N.Y., estimated that only 3% of the consultancy's 400 Fortune 1,000 clients have such plans in place.



Ryder System's Steve Goodson: *'We don't need to put steel doors on grass huts'*

Furthermore, the business unit executives responsible for managing these distributed technologies often lack the background to implement disaster recovery plans like the ones developed over the years by their glass house brethren.

"When you bought mainframe equipment from a manufacturer, the security and backup mechanisms were all packaged for you. That's not true in cli-

Risk mounts, *page 82*

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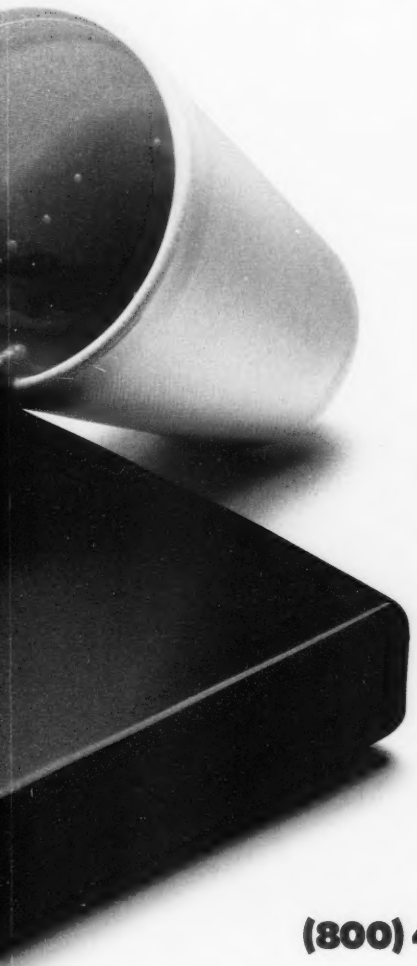
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What's Inside

March 27, 1995

BOOM!

Don't lose your head managing PC and LAN assets. **Managing PC and LAN assets can be like walking in a minefield: out-of-control users, configuration snafus and incompatible applications. If left unaddressed, the explosion in costs will swamp your organization. Management (page 99) tackles the political issues involved in this tricky challenge, while Guide and Marketplace (page 121 and 146, respectively) evaluate the buying decisions in acquiring tools for the job.**

- Bill Gates launches a sweeping defense of **Microsoft**'s corporate activities. **News,** *page 2*
- Aerospace giant **Lockheed Martin** names Joseph Cleveland to head its newly organized IS division. **News,** *page 4*
- A coming wave of products could make a splash in the enterprise for **Apple**. **News,** *page 6*
- **Hewlett-Packard**'s K series server, based on the new PA-RISC 7200 chip, is scheduled to debut today. **News,** *page 7*
- **Novell** renews its developer relations program. **News,** *page 8*
- **Linux**, a free variant of Unix, is being ported to Digital workstations. **News,** *page 10*
- Cisco will unveil new **network management applications**, including one that manages virtual LANs. **News,** *page 12*
- As Intel releases a **120-MHz Pentium processor**, PC vendors respond with a flood of product announcements. **News,** *page 14*
- Users gain more capabilities for managing **networked databases**. **News,** *page 20*
- **Oracle** teams up with desktop mapping vendors to help users extract mainframe data for analysis. **News,** *page 28*
- Client/server users give software providers good ratings on **technical support**, despite some bumps in the road. **News,** *page 159*
- **Paul Gillin** offers up 25 ideas to pass the time while waiting for Windows 95. **Editorial,** *page 36*
- **John Gantz** likens the plan to simplify user interfaces to a government project gone awry. **Viewpoint,** *page 37*
- **Judith S. Hurwitz** advises users to be patient while software takes shape. **Viewpoint,** *page 37*
- **Application suites** are where group scheduling and desktop personal information managers are converging. **Desktop Computing,** *page 39*
- **Netpower** expands its NT-on-RISC offerings with a dual processor. **Workgroup Computing,** *page 49*
- *Computerworld* Test Drives show that **Corel's Video Station** can reduce the videoconferencing hassle and **Oracle's Developer/2000 framework** can provide productivity and functionality, but at a price. **Workgroup Computing,** *page 57* and **Application Development,** *page 89*
- **Microsoft** begins high-volume testing of its on-line service. **Enterprise Networking,** *page 61*
- Some users say installing **SAP's R/3** isn't quite as easy as the company says. **Large Systems,** *page 75*
- User demands drive third-party support for **Texas Instruments'** open initiative. **Application Development,** *page 89*
- **Multiprocessing:** Massively parallel processor and symmetrical multiprocessing systems are gaining momentum in the corporate world, a *Computerworld*/International Data Corp. survey says. **Special Report,** *following page 72*
- Few advanced programs exist for **re-engineering veterans** looking to improve their skills. **Management,** *page 108*

In Depth **SOUND OFF!**

Are computers boosting productivity?

Business professor J. Yannis Bakos says computers provide impressive payoffs; it's the economic studies that are all wrong. But former IS manager Peter de Jager says computers aren't improving productivity, and IS is to blame.

[SEE PAGE 128]

- **Programmer's bookshelf.** Unix, object-oriented programming and Internet books are among the top sellers. **Careers,** *page 133*
- **Stand-alone PC-based** software metering tools offer multiserver and WAN metering, suite licensing, asset management and reporting capabilities. **Marketplace,** *page 146*
- **Charles Babcock** says to look at Unix's strengths, not just its failings. **Commentary,** *page 160*

How do you measure up?

How does your IS department compare with the Computerworld Premier 100? Fill out the Premier 100 survey, and we'll send you a free report showing how your operation compares with Premier 100 averages. Consolidated information from the surveys we collect may be published in a future Premier 100 issue. Send a request on company letterhead to Paul Gillin, Editor, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701 or E-mail to survey@cw.com.

Calendar ..... *Page 113*
Company Index ..... *Page 156*
Editorial/Letters to the editor ..... *Page 36*
March 24 Stock Ticker ..... *Page 157*
How to contact Computerworld ..... *Page 160*

Executive Briefing

Some companies are creating integrated help desks staffed by employees with both mainframe and PC expertise. The idea is to provide one-stop shopping in environments where mainframes and client/server systems coexist. *Cover 1*

Microsoft has told users they can run Windows 95 with only 4M bytes of RAM. But to take full advantage of it, a vast number of customers will have to upgrade their systems to at least 12M bytes of RAM. That could tack $400 on to the cost of placing Windows 95 on each desktop. *Cover 1*

A good five years after the paperless revolution failed to materialize elsewhere, observers are agog over **Owens-Corning**'s bid to forcibly eradicate paper in just a little more than a year. Hidden in the plans for the company's new headquarters is the omission of file cabinets. *Page 2*

Visa International takes another swipe at the greenback — a microchip-based "smart card" that's designed to replace bills and coins for small purchases. *Page 4*

The marriage of geographic information system mapping and logistics algorithms could be a boon for customer service. The pairing could enable service companies to predict a two-hour period for the arrival of the repairman or a furniture delivery, eliminating the uncertainty that leaves customers hanging. *Page 40*

On site this week: Santa Cruz County not only met its performance goals but saved on maintenance and energy costs when it moved to a CMOS mainframe and RAID configuration. *Page 78.* **Maine Medical Center** is increasing its commitment to networks with a state-of-the-art heterogeneous setup that includes an imminent migration to Novell's NetWare 4.1. *Page 61.* A $250,000 imaging system at the **University of Pennsylvania Medical Center** has led to more than $1 million in revenue collections. *Page 49*

The 5th Wave *by* Rich Tennant



"QUICK, KIDS! YOUR MOTHER'S FLAMING SOMEONE ON THE INTERNET!"

Defensive Gates uses keynote to rebut critics

By Stuart J. Johnston
SAN FRANCISCO

Like President Clinton making an important policy speech at a college commencement address, Microsoft Corp. Chief Executive Officer Bill Gates last week turned a routine conference keynote to a group of hardware developers into a broad defense of his company's business practices.

While speaking here to a crowd at WinHEC '95, Gates' speech cut a broad swath through the mountain of criticism heaped on his company, particularly during the past year. Those attacks culminated in an antitrust settlement with the U.S. Department of Justice that was recently rejected in a stinging rebuke from a U.S. District Court judge. That ruling is under appeal.

Among the issues that the seemingly defensive Gates touched on — in some cases for the first time publicly — were the following:

• Apple's seven-year lawsuit, which claimed Windows infringed on Macintosh copyrights:

"The result of that lawsuit would have been the elimination of Windows from the marketplace. It's kind of incredible that during the time that Apple pursued that lawsuit — [which] cost us tens of millions of dollars — we were their most aggressive developer," Gates said. "No amount of lawsuits will deter us in what we believe is doing right for both PC and Macintosh customers."

• Apple's complaint that Microsoft would not give Windows 95 beta copies to its systems group:

"Take any competitor of ours, whether it's Apple or Sun, and we have dozens and dozens of copies out to those people. Apple has some complaints about us really not sending them the 25th or 26th copy, but what's novel is that their reciprocal policies are not nearly as generous."

• Microsoft's initial rise to dominance in the industry:

"Not many people remember that the IBM PC, when it first came out, offered a variety of operating systems. In fact, a best-selling analyst at the time called it 'the CP/M record player,'" Gates said, in a reference to the now defunct Digital Research, Inc. competing operating system, CP/M.

• Accusations that Microsoft does not share operating system information with competitors:

"Companies that do innovative work are under no obligation to share that work in advance of putting out their products," Gates said. "There are many examples where this has been tested thoroughly, whether it's IBM with mainframes or Kodak with films or companies making products where other competitors provide replacement parts within those products."



Microsoft's Bill Gates: *'No amount of lawsuits will deter us in what we believe is doing right for both PC and Macintosh customers'*

• Federal Judge Stanley Sporkin's complaints that the company engages in "vaporware" announcements in order to freeze competition:

"We went back and looked at all of the vaporware lists in time and who had the top products on the vaporware lists, [and] we had a couple out of the Top 20. We certainly are not perfect in terms of making the dates that we announce, [but] those dates are really driven by a priority of quality. Everything we're sharing is with the simple goal of helping developers and customers know what they should be doing."

• The issue of sharing information between Microsoft's systems and applications divisions:

"We get input from our applications groups into the systems groups, and we get feedback from our systems groups to our applications groups. We don't block input going in either direction," Gates said. "There is no Chinese Wall. It's in our interest to help other developers with lots of information, but it is a different situation than what goes on internally."

• Microsoft's role as the dominant player in the industry:

"Microsoft is in a unique role. We recognize that. We have a sense of responsibility about it. Certainly it has advantages. The risks we took in developing the Windows system means that we have a customer base out there that's very, very substantial. There's no guarantee that our new versions will be successful. In fact, convincing people to destabilize what they've got, make a change and [spend the] extra money is an incredible challenge."

• Whether Microsoft's move into new areas, such as the information superhighway, guarantees its dominance of those areas as well:

"It's fair to say that some giant-size companies will essentially be coming into our industry. If you believe, as I do, that the PC will be at the center of the information highway, then we'll have communications companies, entertainment companies, companies of many, many different types coming in. And for many of us, that means a new level of competition dealing with companies that have a broad set of activities," Gates said.

Owens-Corning to go paperless in new building

By Julia King

Some might call Owens-Corning Fiberglass Corp.'s information systems plans insane. But to Chief Information Officer Mike Radcliff, they are merely aggressive.

A good five years after the paperless revolution failed to materialize, observers are agog over the corporation's bid to forcibly eradicate paper in just a little more than a year.

Last week, Owens-Corning broke ground for a $100 million world headquarters building in Toledo, Ohio, which is scheduled to open in May 1996. Hidden in that seemingly mundane announcement is the fact that file cabinets were intentionally excluded from the design.

This gives employees at the $3.3 billion materials manufacturer exactly 13 months to figure out how to live without paper. They also must figure out how and where to deploy videoconferencing facilities, multimedia kiosks, electronic whiteboards, docking stations and wireless LANs. And that is just for starters.

Employee evaluation

Along with the company's 250-person IS department, workers will evaluate palmtops, laptops, satellite and cable services, CD-ROM publication systems, Internet services and handwriting recognition systems.

And in their spare time, IS staffers will rip out virtually every one of the company's current information systems and implement SAP America Inc.'s client/server R/3 enterprise software (for more on SAP installations, see page 75). But that schedule is a tad more leisurely. IS has 24 months to bring up manufacturing, sales and research facilities in more than 30 countries.

The activities are all part of the company's migration to a new customer-focused work culture, which is based on employee teaming, worker mobility, ongoing learning and a paperless work environment.

As for the total cost of all the new technologies, that has yet to be determined, said Jerry McColough, leader of the technology transition team.

"It's not like we have a budget set up. We're working instead with a range," McColough said. "The idea is, if the businesses feel they can use a technology to work differently and it is a business advantage, it will be available to them."

So, is this company insane or what?

"I think we do have one of the most aggressive schedules you'll find," Radcliff said last week. But are they crazy? Not at all, he insisted.

"It's simply that we're looking to make a very rapid transition," he explained. "The fact that we were building a new headquarters was such a wonderful icon for workplace transformation. We figured it is where we can really bring it all together."



Owens-Corning's Mike Radcliff: *'I think we do have one of the most aggressive schedules you'll find'*

To do it all on schedule, Owens-Corning has asked users to evaluate the technologies they will be expected to use.

Employees also are charged with defining precisely how new high-tech gear should be used, said John Lee, who works in medical services and is on the 11-member employee design integration team. Known as the EDIT, the team functions as a liaison between IS and the company's 1,000-person headquarters staff.

Lee and Radcliff agreed that involving users in technology choices actually speeds up selection and deployment plans. Already, Lee noted, users have developed 300 different electronic mail-based forms that replace paper documents.

To acquaint users with different technologies, Owens-Corning last month hosted a vendor showcase at which more than 40 companies demonstrated their products. Additionally, the company has set up prototype offices, complete with movable furniture, PCs, printers and other equipment, which users are encouraged to try out.

"We are viewing the entire building as a kit of parts that employees can use to configure their work space to meet their needs or the needs of teams," Radcliff said. "We have a very mobile workforce, and people travel a lot, so the building and technology is being designed so that people can move around or customers can come in and work with us."

Despite all of the feedback and input from employees, IS will still make the final decision about which technologies to buy. Between now and next May, IS will evaluate more than 50 different products in its in-house integration lab.

"But we're very much focused on this as a participative process and on trying to generate enthusiasm [about IS] on the part of the workforce," Radcliff said.

As for users, "this is a real breath of fresh air for us," Lee said. "[Before], IS had always been a kind of mysterious group to us, but this is a very collaborative effort."



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Lockheed Martin plans to slash IS by $700M

New IS chief intends to meld organizations into four units

By Julia King

Lockheed Martin Corp. in Bethesda, Md., last week disclosed plans to slash internal information systems costs by $700 million during the next five years.

The $23 billion aerospace giant — created through the merger of Lockheed Corp. and Martin Marietta Corp. this year — also tapped industry veteran Joseph R. Cleveland for its top IS post, naming him president of the newly created Enterprise Information Systems Co. in Orlando, Fla. Cleveland said last week that one way he aims to achieve the cost-cutting goal is by reorganizing the company's far-flung 5,500-person IS organization into four centers of excellence. Cleveland was formerly vice president and general manager of Martin Marietta's Internal Information System in Orlando.

However, Cleveland stopped short of ruling out staff reductions as duplicate systems are eliminated and legacy systems are replaced with newer, distributed technologies. Since June 1994, Lockheed and Martin Marietta together have laid off more than 32,000 workers.

"In the new corporation there is a lot of anxiety about what changes will take place, so I don't want to communicate any specifics," he said. "Paring will depend on what the business requirements are as we go forward."

Virtual workgroups

Under the centers of excellence structure, Cleveland said IS staffers dispersed across dozens of facilities will remain where they are but will be assigned to one of four groups: applications development, distributed computing, systems design and architecture and host computing. From these groups, teams will be organized and deployed on a project-by-project basis, with team members often working remotely with one another.

Costs will be reduced, Cleveland said, by eliminating the need for a full range of skill sets at each location.

"It's the overwhelmingly correct thing to do," said Gerald Ross, a partner at Change Lab International, a Greenwich, Conn., consultancy specializing in virtual organizations. Currently, Ross said he is working with several large companies, including Xerox Corp. in Rochester, N.Y., and Du Pont Co. in Wilmington, Del., which are considering converting traditional staff-oriented functions, including IS, into self-sustaining "businesses within the business."



Joseph R. Cleveland *will help Lockheed Martin cut costs by reorganizing IS*

Handling diversity

Given Lockheed Martin's highly diverse array of core businesses — which range from manufacturing rockets to integrating commercial information systems — organizing IS as a virtual entity makes "perfect conceptual sense," according to Red Jahncke, president of The Townsend Group, an information services consulting company in Greenwich, Conn. "But the practical challenges in making it happen can be substantial. If you have lots of different companies, all with different standards, that's a significant challenge," he said.

At Lockheed Martin, one of Cleveland's chief hurdles will be to create a seamless corporate communications utility, a prerequisite for any group looking to work together on a virtual basis. This will involve consolidating and integrating hundreds of LAN and WAN facilities at the 30 to 40 former Lockheed and Martin Marietta companies that now make up Lockheed Martin.

"We're going to hone down to a minimum set of preferred E-mail products to obtain interoperability. After that, we'll look at the right balance between E-mail and other communications mechanisms including the Internet," Cleveland said.

A company spokesperson said no time frame or budget has been set for completing the E-mail systems consolidation. The company is still investigating the range of systems currently in place. Once a system is chosen, training costs would be incurred, the spokesperson said.

Culture clashes also are bound to surface, especially since former IS division managers from Lockheed are accustomed to working relatively autonomously and with their own IS budgets. Martin Marietta managers, on the other hand, have operated in a centralized IS environment.

"It's a whole new ballgame for Lockheed folks in that they'll report to central IS rather than to the local business," said a Lockheed Martin source.

But none of this is exactly new to Cleveland, who played a key role in combining IS operations and cutting costs after Martin Marietta acquired General Electric Aerospace Systems in 1993. In 1994, Cleveland cut about $70 million from Martin Marietta's internal IS costs by consolidating mainframe centers and negotiating new telecommunications and software licensing contracts.

"There have been a lot of lessons learned that apply, and probably the highest thing on the list is valuing cultural diversity," Cleveland said.

Visa offers alternative to debit cards

By Thomas Hoffman

In its latest effort to replace cold hard cash, Visa International has announced "stored value cards" in which microprocessors embedded in plastic cards can hold and process money in the form of electronic data.

Unlike debit cards, which transfer money electronically from customer bank accounts, these new "smart cards" will have small amounts of money stored on them. Cardholders will eventually be able to use them interchangeably in pay phones, supermarkets, convenience stores and vending machines.



Wachovia's Gaylon Howe *says smart cards will add convenience and security*

Visa, MasterCard International Inc., and Europay have been cooperating since 1993 to develop standards that will enable merchants to handle the microprocessor-based cards. This week, New York-based Mastercard will announce plans for its smart card pilot programs.

Consumers will be able to use the "electronic purses" by inserting them into small terminals or customized slots on vending machines. The terminals will display the account balance, deduct the purchase amount and display the remaining balance on the card. Rechargeable smart cards can be reloaded with funds from checking or savings accounts, while disposable cards can be discarded once the value has been depleted.

Disposable cards will be available for purchase at kiosks similar to automated teller machines, and in the future, some banks may incorporate the technology in their debit cards.

No easy task

Although analysts expect that smart card technologies will help merchants by reducing their cash processing activities, several unresolved technical issues still remain — for example, how data will be downloaded from nonnetwork devices such as soda machines.

While revenue from vending-machine items such as candy bars may sound like small change, Visa officials estimate that consumers spend $1.8 trillion worldwide each year in amounts of $10 or less.

The first major target for Visa's smart cards will be the 1996 Summer Olympic Games in Atlanta, where more than 5,000 merchants are expected to handle them. First Union Corp., NationsBank and Wachovia Bank have agreed to begin pilot programs in the Southeast later this year and anticipate a full rollout for the 1996 games.

Executives at member banks expect the Olympics to serve as a test-bed for a nationwide rollout of the electronic purses; a date for that rollout has not yet been determined. Gaylon Howe, senior vice president of self-service electronic banking at Wachovia in Winston-Salem, N.C., said his institution is still examining the revenue potential of the smart cards.

Bank analysts have already identified a few opportunities. "If you put $50 on a card and forget to use the last $2, it's like a traveler's check — if you don't redeem them over time, somebody makes big money on the float," said Bill Bradway, a technology analyst at The Tower Group, a Wellesley, Mass., financial services and technology consultancy.

Visa currently earns 1% to 3% for each credit-card transaction, said Jim Beams, also a technology analyst at The Tower Group. Visa and member banks "are going to have to find a way to charge less than 1% of each transaction" of the smart cards to make them feasible for member banks and merchants, Beams said.

Corrections

A story on Kash n' Karry's plan to halt object development, "Back to Basics," [CW, March 20], incorrectly reported that Oberon Software, Inc. went out of business. Oberon in Cambridge, Mass., remains in business but has switched from developing Unix-based software to products designed to work under Windows.

Due to incorrect information supplied to *Computerworld*, "Mister nice guys" [CW, March 20] reported that Oracle Corp. was not invited to join Sybase, Inc.'s New Information Industry Cooperative Endeavor coalition. Oracle was invited but has not said if it will participate in the March 29 announcement.

Due to a reporting error, "Wireless mobile computing hits Wall Street" [CW, Feb. 20] referred to Wireless Telecom, Inc. as Wireless Technologies, Inc.

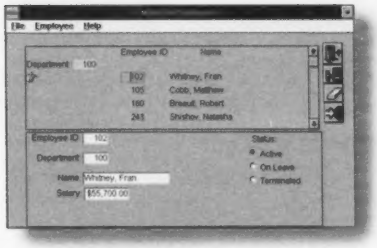
Due to an editing error, a Feb. 20 article misidentified the supplier of Chase Manhattan Bank NA's videoconferencing system. The company is Uni-Data and Communications, Inc. in Flushing, N.Y.

In "Microsoft prepares 'tag team' SNA Server for NT update" [CW, March 13], it was incorrectly stated that SNA Server 2.11 will require Windows NT Server 3.51 to run. It will only require NT 3.51 if the user chooses to run it on an IBM/Motorola PowerPC, according to Microsoft.

DEVELOPER PRODUCTIVITY COMPARISON

Sybase

PowerBuilder 4.0



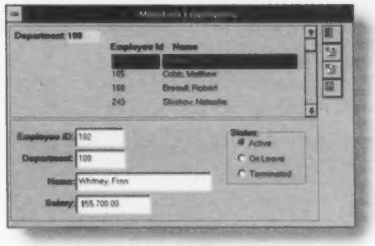
52 lines of code

```
ELSE
  COM
  dw_n
  dw_n
END I
Master
ed
long er
long ro
rownur
empnu
IF dw_
  COM
ELSE
  ROLI
  Messa
detail")
END I
Master
close(p
Master
dw_det
dw_det
dw_det
Master
Application.Open
SQLCA.DBMS=ProfileString("PB.INI","Data
base","DBMS","")
SQLCA.DbParm=ProfileString("PB.INI","Da
tabase","DbParm","")
open(w_employees)
Application.Close
DISCONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  ROLLBACK using SQLCA;
  MessageBox("Disconnect",SQLCA.SQLER-
RTEXT)
END IF
MasterWindow.Open
CONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  MessageBox("Connect
Error",SQLCA.SQLERRTEXT)
  HALT
END IF
dw_master.settransobject ( sqlca )
dw_detail.settransobject ( sqlca )
IF dw_master.Retrieve() = -1 THEN
  ROLLBACK using SQLCA;
  MessageBox("Retrieve","Retrieve Failed")
```

** Taken directly from "PowerBuilder Getting Started"
© 1991-1994 By Powersoft Corporation.

Oracle

Developer/2000



4 lines of code

```
exit_form;
create_record;
delete_record;
commit_form;
```

It's amazing how many lines of code you'll find behind the exact same application.

These two programs do exactly the same thing: create a Windows application that retrieves and updates employee information stored on a database server. The 52 Line PowerBuilder application was taken directly from the PowerBuilder manual. Oracle's new Developer/2000™ implements the identical application in just 4 lines of code.

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ORACLE

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Apple product blitz covers all the bases

Broad hardware rollout will run the gamut

By Lisa Picarille

Apple Computer, Inc. has been making a lot of noise lately about its systems software strategy, causing some users and industry watchers to fear that the company's desktop hardware commitment has withered.

"Apple is a brilliant hardware company under the psychotic delusion [that] they are in the software business," said Jeffrey Tarter, editor of "Soft Letter," an industry newsletter in Watertown, Mass.

But Apple is far from abandoning the Macintosh hardware business to the licensees of its Mac OS operating system. Apple's revenue last year was $8 billion, but only $100 million came from software sales and licensing. This year, the Cupertino, Calif., giant is readying a slew of systems that run the gamut from entry-level machines to high-end workgroup servers.

Analysts said this coming wave of products could make a splash in the enterprise because Apple will finally have some competitive offerings on the server front.

Product avalanche

In April, the company is expected to unveil its education-oriented Trailblazer. The LC 5200 is an all-in-one 75-MHz, PowerPC-based 603 Macintosh. At the same time, Apple will announce Crusader, a Performa 6200 with the same logic board as the LC 5200 and a PowerPC 603 chip, according to sources close to the company.

In June, Apple plans to release its generation of Peripheral Component Interconnect bus Macintoshes, which include Tsunami, a six-slot PowerPC 604 chip-based Macintosh tower; and Shiner, a Unix version of Tsunami, sources close to the company said.

Apple is also expected to further expand its reach into the enterprise with a PowerPC 620-based Power Macintosh server, although no dates are yet firm. Such a server would go head-to-head with Digital Equipment Corp.'s high-end Alpha servers.

IBM is also expected to release a PowerPC 620-based server, according to the sources.

The PowerPC 620, due out in volume in the second half of the year, is the fourth chip in the PowerPC family. It runs 32- and 64-bit applications simultaneously and is three times faster than the 601.

"I'm not sure I would be interested [in a 620-based server] since there is really no huge advantage to go to Power Macintosh anyway, [at least not] until Apple Share runs in native mode," said Russ Chapman, technical services manager at the Boston office of Jack Morton Productions, Inc., a firm with 200 Macintoshes. Chapman currently uses a Quadra 630 as a server.

Others said the dearth of Macintosh applications keeps them away from Apple's high-end systems.

"For better or for worse, we are hooked into using a lot of applications that don't fully take advantage of the PowerPC chips," said Mitch Hollander, a research scientist at the Food and Drug Administration's Billerica, Mass., research and development group, which has about 100 Macintoshes. "Apple needs to encourage more client/server applications. There are a lot of applications for the Intel platform, but you have to search harder to find comparable apps on the Mac."

No spit in the shine

Analysts said Apple's server push thus far has been lackluster.

"Apple created a whole division in 1989 for the sole purpose of gaining ground in the enterprise, and so far they have had virtually no impact," said Ken Lim, president of CyberMedia Group, a market researcher in Cupertino, Calif.

Apple has an estimated 8% to 9% of the business market, Lim said, whereas its overall market share ranges anywhere from 11% to 15%.

However, as Apple prepares to launch new systems, it is once again plagued by chronic shortages in its product line. Speaking at a press conference in London last week, Apple Chief Executive Officer Michael Spindler acknowledged that Apple is experiencing shortages with its line of Power Macintosh 8100 systems and attributed the problems to "poor planning and component shortages."

Three-year plan will transition Mac OS to portable system

By Lisa Picarille

With a series of incremental and major updates during the next three years, Apple Computer, Inc. plans to transition its Mac OS from a proprietary operating system to a portable, microkernel-based RISC system that is fully customizable.

The impending rollout of Microsoft Corp.'s Windows 95 and Cairo operating systems, coupled with Apple's decision to license the Mac OS, has forced the normally tight-lipped Apple to sketch out its strategy.

Apple plans to give information systems managers and users the ability to configure the interface and its menu components to meet the requirements of each new user. For example, a new user could receive active assistance via task agents, while an experienced user could have repeated tasks automated.

"Apple has an advantage with the user interface, and still they let Microsoft make all the noise," said Chris LeTocq, president of SoftTracks, a software researcher in Los Altos, Calif. LeTocq said that while the two firms spend similar amounts on systems software research and development, "the leverage Microsoft gets from that is substantially more than Apple."

Windows runs on 70% of the world's 70 million PCs, while Mac OS is on about 11% to 13%, according to Dataquest, Inc. in San Jose, Calif.

Apple executed the first step in its process of evolving the Mac OS last week when it shipped System 7.5 Update 1.0 (see chart). The update boosts basic system performance and revs up its QuickDraw graphics engine by optimizing specifically for PowerPC-based Power Macintosh systems.

The next phase, according to sources briefed on Apple's plans, is the forthcoming release of System 7.5 Update 2.0 — code-named Marconi and due out in May. That is when Apple is expected to deliver its next generation of speedy and standard Peripheral Component Interconnect-based Macintoshes.

Marconi will offer a new application programming interface for QuickDraw acceleration and a native PowerPC resource manager, which loads application components into memory faster. Sources said Apple is expected to include a version of Open Transport, its communications architecture, which will also be available separately for older Macintoshes.

Complete reworking

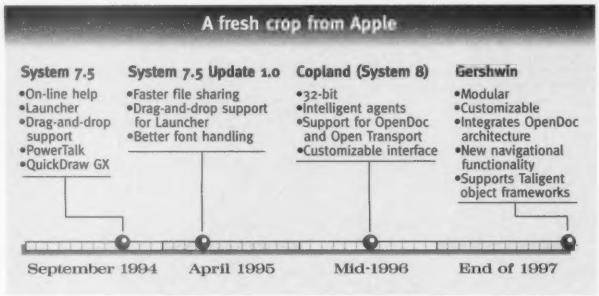
And in mid-1996, users can expect a major Mac OS upgrade. System 8, code-named Copland, is a complete overhaul of the Mac OS. It will contain 95% native PowerPC code and use microkernel technology, according to Vito Salvaggio, Copland marketing manager at Apple.

The revamped Mac OS is highly anticipated by some users.

"With the microkernel, I expect better speed and integration. It should also be more stable, less prone to crashing," said Cliff Rees, president of Telegroup, Inc., a long-distance telephone service provider in Fairfield, Va. The firm has 195 Macintoshes.

Originally slated to ship at the end of the year, Copland was delayed to incorporate hardware abstraction. This feature lets Apple detach the operating system from the read-only memory and application-specific integrated circuit chips, thus enabling hardware vendors to manufacture true clones.

While Copland sets the stage for multiprocessing, it will not be fully implemented until Gershwin — the next major Mac OS upgrade, expected by the end of 1997. In Copland, the I/O and network services will be memory protected and pre-emptively multitasked, Salvaggio said.



'MacClones' set to debut

By Lisa Picarille

Send in the clones.

Attendees at this week's Seybold Seminars '95 in Boston will be treated to the first wave of Power Macintosh-based professional publishing systems from Macintosh clone makers Radius, Inc. and DayStar Digital, Inc.

These systems will be the first machines ever to natively run Mac OS but not be produced by Apple Computer, Inc.

The Radius System 100, based on Apple's 8100 Power Macintosh and running on the PowerPC 601 chip, is in limited beta testing now at several professional publishers' sites. The forthcoming high-end Macintosh clone includes 72M bytes of RAM, a 500M-byte internal hard drive, a 2G-byte built-in SCSI drive and a double-speed CD-ROM drive, according to sources briefed on the San Jose, Calif., company's plans.

In addition, the Radius System 100 comes with Radius' Thunder 4 GX graphics accelerator and is slated to ship by July at a price of less than $12,500, sources said. Radius declined to comment.

DayStar will be showing off two systems: a multiple-processor Power Macintosh clone sporting Peripheral Component Interconnect bus slots and a single-processor version of the same machine. Both are tower-style systems that use the PowerPC 604 chip, according to officials at the Flowery Branch, Ga., firm.

Both systems will also come with 512K bytes of static RAM cache, 32M bytes of RAM, a 2G-byte fast SCSI-2 drive and a quadruple-speed CD-ROM drive. The two models, expected to be priced between $5,000 and $10,000, are due out in August.

HP servers: Price pleases, speed dismays

By Jean S. Bozman
PALO ALTO, CALIF.

Hewlett-Packard Co. today will announce a new K series server for its HP 9000 midrange Unix server line, but the server's speed rating falls surprisingly short of what analysts and users had expected.

The server's PA-RISC 7200 chip, optimized for symmetrical multiprocessing operations, clocked in at 100 MHz — at least 25% slower than the 125- to 140-MHz speed expected by analysts and described by HP's chip scientists in technical papers.

Some users of HP workstations said last week they are disappointed with the speed, which will delay the 7200 chip's entry into the HP 9000 Model 700 workstation product line possibly until summer. The Model 700s already use a 125-MHz PA-RISC 7150 chip.

Speed limit

HP workstation speed is second only to that of Digital Equipment Corp.'s Alpha, analysts said. But Digital, IBM and Sun Microsystems, Inc. are all expected to announce a new round of powerful workstation models in the coming months.

The chip is a marketing setback for the aggressively priced hardware line, users and analysts said. The machines cost from $21,270 for a K100 uniprocessor to $90,350 for a high-end four-processor K400 server.

Server customers said they approve of the line's pricing, which keeps HP on its planned price/performance curve. The line's modular server design will let users upgrade from low-end K100s to high-end K400s without changing the outside cabinet, analysts said.

HP executives had outlined the unification of HP's servers and workstations with 7200 chips and the HP-UX 10.0 operating system in January [CW, Jan. 23]. But HP said last week it would not announce new 7200-based Unix workstations — including some multiprocessor units — until summer, several months later than analysts and users had expected. HP's last major workstation announcement was last May.

HP would not comment on why the K servers' 7200 chip runs slowly, but several users and analysts said it is because HP testing found that the high-frequency versions did not perform reliably.

Server packaging and pricing may offset the tuned-down CPU chip, analysts said. "They get good marks for the pricing," said Nancy Stewart, an analyst at Dataquest, Inc. in San Jose, Calif. "The new packaging provides users with a good upgrade path. They're setting the stage for the [64-bit PA-RISC] 8000 and the eventual HP/Intel combined chip," she said [CW, March 6].

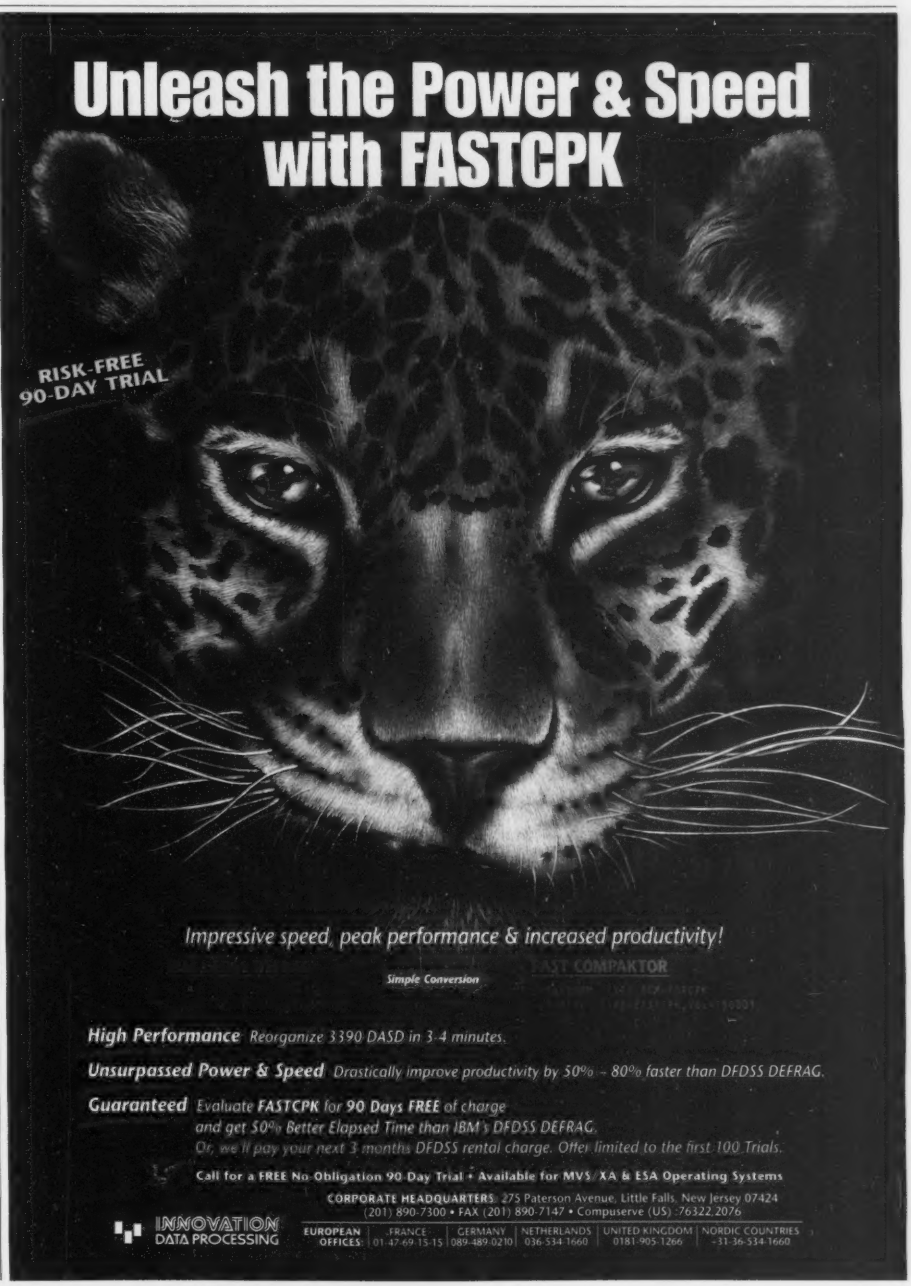
Aside from the performance lag, users were mainly upbeat about the new boxes. "If HP is coming out with something more powerful at attractive prices, we'd consider that," said Rodger Lindquist, applications development manager at Bio-Rad Labs, Inc., a Hercules, Calif., maker of laboratory test equipment.

The $350 million company has an HP 9000 Model 877 in development and is preparing a worldwide rollout of E-class servers for its 15 subsidiaries. Lindquist said the K models appear to offer better price/performance than the E models, and he would like to explore using K models instead.

In recent weeks, AlliedSignal Aerospace has been evaluating the K servers, code-named KittyHawk, said Paul Hoedeman, vice president and chief information officer at the $4.6 billion aerospace unit in Torrance, Calif.

Hoedeman said he plans to use both the 7200 workstations and servers in a worldwide rollout of engineering systems. "Both had the same chip, and one is more optimized for I/O, [while] one is optimized more for compute" functions. Until now, the aerospace business has used HP 9000 Model 755 high-end workstations as servers for its engineers.

Netpower and Tricord freshen up their superserver lines. See pages 49 and 57.



'Show me' attitude greets Novell at Brainshare

Company execs detail strategy to win back alienated developers

By Laura DiDio
SALT LAKE CITY

Novell, Inc. used the occasion of its Brainshare '95 conference here last week to kick off a renewed developer relations program that promises to increase the avenues of direct contact between Novell and its third-party suppliers.

For more than a year now, developers have decried Novell's laxity in delivering updates to its software developer application tool kits. They have also complained that the company's technical support staff either takes too long to respond, does not respond at all to problems or does not provide workarounds for bugs.

As a result, developers often have to fix problems themselves, so it takes them longer to deliver glitch-free applications to users.

These problems have left the door wide open for developers and users alike to defect from Novell to rival Microsoft Corp.'s Windows NT Server, developers said last week.

Joe Firmage, vice president of strategic planning for the NetWare Systems Group, acknowledged that in recent months Novell has not done a "good job of supporting its 60,000 to 70,000 NetWare" independent software vendors. But he vowed that situation will change for the better in the coming months.

The new initiatives will include better telephone support, additional detailed information on new products, faster certification testing in Novell laboratories and an improved process for getting the latest software and upgrades, according to Gary Mueller, Novell's recently appointed vice president of developer relations.

The changes cannot come soon enough for a clearly disgruntled and restless developer population.

"I'll believe it when I see it," said Brett Warthen, president of Infinite Technologies, Inc. in Owing Mills, Md., and a systems operator on Novell's NetWire forum on CompuServe.

Warthen said he was so frustrated with the lack of support from Novell's developer relations group after posting technical questions and receiving no responses that he just quit dealing with them more than a year ago.

"It's pretty bad when even NetWire [systems operators] can't get any backup support from Novell on developer questions," Warthen said. "We gave up. And many of our end-user customers are taking a closer look at Windows NT. As much as I detest some of Microsoft's practices, they are extremely cooperative, and they give me the answers I need in a timely fashion."

Absentees

Steve Meyer, president of Avanti Technology, Inc. in Austin, Texas, is another longtime NetWare developer who has had support problems.

"It's pathetic that Novell's development support has been funneled to outside fulfillment houses. I've actually posted questions asking for fixes on bugs in NetWare and various applications that have been totally ignored by Novell because their developers couldn't come up with a solution," he said.

Marc Perkel, president of Computer Tyme, Inc., a Novell user and third-party developer in Springfield, Mo., agreed. "If Novell still has a developer relations group, I'd love to hear from them," he said.

Developers such as Perkel, Warthen and Avanti acknowledge they are disgruntled by poor support from Novell's developer relations group. In fact, because they were so turned off by what they characterized as "lightweight technical content" at the Brainshare '94 conference, they skipped this year's event.

However, all of Novell's largest developers such as Oracle Corp. and Sybase, Inc. were in attendance. And while those developers who bypassed the event are nowhere near as large, they are still a key part of Novell's strategy.

The good technical sessions at Brainshare '94 "were so few and far between that I spent most afternoons playing pool and pinball with the other developers," Warthen said.

"Last year, they tried to sell us on AppWare even though we knew Novell wouldn't support the AppWare Foundation; this year their mission was to sell developers on PerfectOffice and GroupWise," Warthen added. "Frankly, I was underwhelmed by what I saw in the preliminary conference brochure."

Novell contends that such complaints are in the minority. The company pointed to a recent Dataquest, Inc. survey in which the Santa Clara, Calif., market research firm found that half of the 500 developers questioned were satisfied with Novell's current developers program.

Additionally, Jared Blaser, Novell's director of developer support, said his group polls third-party developers on a monthly basis.

"On a scale of 1 to 5, we're consistently scoring about a 4.2 satisfaction rate. That's not perfect, but it's above average," Blaser said.

News Shorts

User charges Andersen Consulting with fraud

Andersen Consulting last week was slapped with a $100 million lawsuit by **UOP**, a Des Plaines, Ill., engineering company that claims the $3.4 billion systems integration giant "bilked millions" of dollars from it as a result of its "ineptitude and deception." UOP charges Anderson with "fraud, incompetence and neglect" in connection with its work on an engineering specifications system and a second UOP computer system for estimating project costs. Last week, Andersen dismissed the allegations as "completely without merit."

SATAN burns developer

Dan Farmer, a computer security expert at **Silicon Graphics, Inc.** (SGI), left the company in a dispute over his plan to release a so-called "attack scanner" via the Internet on April 5. The Security Analysis Tool for Auditing Networks (SATAN) is software that searches Unix computer networks for security flaws. The scanner is intended for legitimate diagnostic work, but the planned release alarmed many security experts, who fear it will become another powerful weapon for hackers. An SGI spokeswoman said the company wanted SATAN distributed in a carefully controlled way.

Road warriors get help

Epilogue Technology Corp. in Albuquerque, N.M., and **Xircom, Inc.** in Calabasas, Calif., will launch an effort this week at **Networld/Interop '95** in Las Vegas to help network managers deal with remote connections by mobile users. Proposed object types for a new Management Information Base (MIB) will address the configuration, power and communication characteristics of laptop and remote access nodes. A Mobile MIB is needed to help central staff isolate problems and improve connections for far-flung users via the Simple Network Management Protocol, proponents said.

Microsoft joins 'dream team'

Microsoft Corp. and **DreamWorks SKG** last week formed a joint venture to develop interactive and multimedia products. The DreamWorks Interactive unit, which was launched with $30 million in funding, hopes to have its first products out before Christmas 1996. The deal came on the heels of an announcement that billionaire Microsoft co-founder Paul Allen will ante up $500 million for a chunk of DreamWorks SKG, which was founded by the Hollywood dream team of Steven Spielberg, Jeffrey Katzenberg and David Geffen.



IBM plans Warp server

IBM plans to offer a product merging OS/2 Warp with LAN Server 4.0. Due out within a year, it will be named OS/2 Warp Server or OS/2 Integrated Server. IBM officials said they will also offer an "enterprise extension" package this fall; it will provide a global services directory based on the Distributed Computing Environment. Other bundling options with LAN Server may surface later.

Pentathlon aids PC upgrades

Users of **IBM PC Co.**'s ValuePoint and PS/1 desktops and **Compaq Computer Corp.**'s ProLinea will have a way to upgrade these primarily 486-based systems to Pentium. **Reply Corp.** in San Jose, Calif., will introduce tomorrow its Pentathlon motherboard replacements for these models. Prices start at $995.

Students nabbed in theft

Four Long Island, N.Y., college students were arrested March 16 on charges of grand larceny and forgery in the theft of international credit-card numbers from a source on the Internet. The students are accused of purchasing more than $100,000 in stereo gear, computers and other items using the stolen numbers. Police would not say how the credit-card numbers were obtained nor from what Internet source.

SHORT TAKES The **U.S. Senate Commerce Committee** last week passed a hodgepodge of telecommunications legislation allowing the regional Bell holding companies to enter the long-distance networking business. The bill also includes Sen. James Exon's (D-Neb.) controversial amendment to keep obscene materials off on-line networks [CW, Feb. 27].... **Lotus Development Corp.** will appeal a federal court's decision to declare **Borland International, Inc.** the winner in the two companies' 4-year-old copyright dispute.... **Baxter International** in Deerfield, Ill., last week named Cathy Brittain-White to the long-vacant post of chief information officer at the global health care products supplier. She was formerly vice president of information systems at **Allied Signal Corp.**'s engineered materials division.... Peter T. Caserta, former chief executive officer at **Spectrum Information Technologies, Inc.** in Manhasset, N.Y., was indicted last week, along with nine associates, on charges of wire and mail fraud.... The federal **Occupational Safety and Health Administration** last week released a draft ergonomics standard to deal with repetitive stress injuries.

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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
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22. Dir./Mgr.: Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Admin Svs.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
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CORPORATE MANAGEMENT
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12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
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70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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Alpha systems targeted for Unix variant

By Neal Weinberg

A low-cost, low-end workstation is under development that will run Linux — a free variant of Unix — on a 64-bit Digital Equipment Corp. Alpha box.

Linus Torvalds, the Finnish graduate student who wrote Linux, confirmed last week that he is in the early stages of porting Linux to Alpha, using a DEC 2000/300 PC provided by the Maynard, Mass., company.

"I'm looking forward to seeing an Alpha port, and I would seriously consider Alpha-based workstations provided Digital priced them competitively with a high-end Pentium," said Greg Wettstein, director of pharmacological services at the Roger Maris Cancer Center in Fargo, N.D.

The cancer center has been running its entire operation on 29 Linux-based workstations since 1993, Wettstein said, making it one of the largest commercial Linux installations.

The advantage of porting Linux, currently available only on 386- and 486-based PCs, to Alpha would be to turn the operating system loose on a RISC-based "inherently hotter underlying box," he said.

"It's fascinating that somebody like Digital even has a team working on this," Wettstein said. Digital's marketing plans are unclear, but Wettstein said if the port is successful "Linux will market itself."

In fact, that is pretty much what has happened during the past two years, as a cottage industry has sprung up around Linux, which is freely available on the Internet. Linux has no company, no advertising and no marketing budget.

Larry Augustin first used Linux as a way to get Unix on his home PC for free. Realizing that there is "a fair amount of pain" involved in getting the system up and running, he built a business selling completely configured Linux PCs.

Augustin, now president of VA Research, Inc. in Menlo Park, Calif., said, "We're looking forward to offering our customers Linux workstations on Alpha," as an alternative to Intel Corp.-based PCs.

Viable or not?

Linux has spread primarily to individual users and colleges, but even on campus not everyone is a Linux devotee. One software engineer at a major university and a Digital user said Linux is not a "commercial-strength" product.

Dan Kusnetsky, an analyst at International Data Corp. in Framingham, Mass., said a Linux/Alpha econobox could be a marketing nightmare for Digital, which already has three operating systems — OpenVMS, Digital Unix and Windows NT.

"Digital has a confusing lineup now. Adding another one will not improve that," Kusnetsky said. The Digital/Linux venture could turn out to be an interesting "technology safari" that never makes its way out of the development jungle, he added.

A Digital spokesman said the company has no plans to manufacture Linux-based workstations.

Torvalds said he hopes Linux/Alpha will develop into a legitimate alternative.

From Helsinki, Torvalds is forging ahead on the port. He has completed memory management, page sharing, the basic file and shell utilities and device drivers.

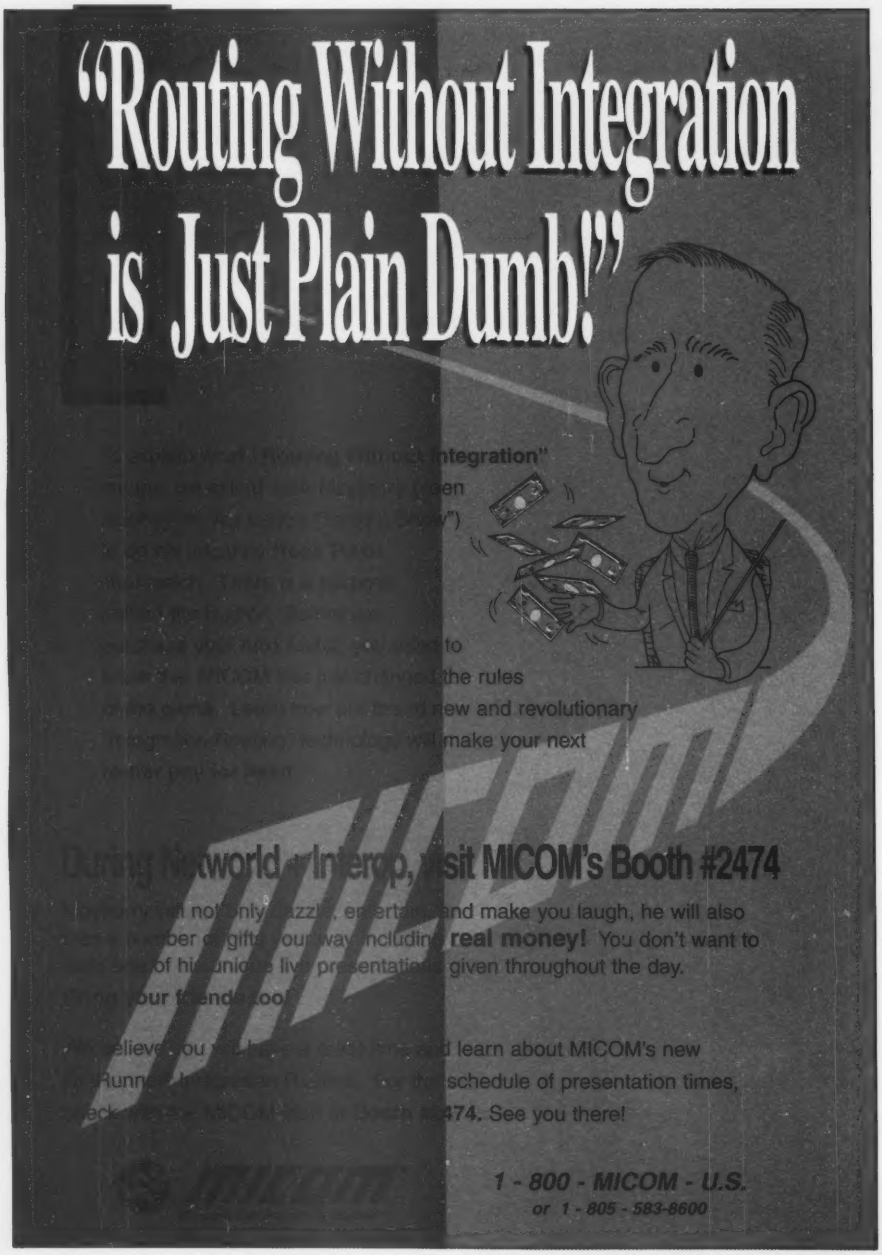
Torvalds is scheduled to deliver a Linux tutorial at the May Digital Equipment Computer User Society meeting in Washington, leading to some speculation that he will boot up a Linux/Alpha system at that time.

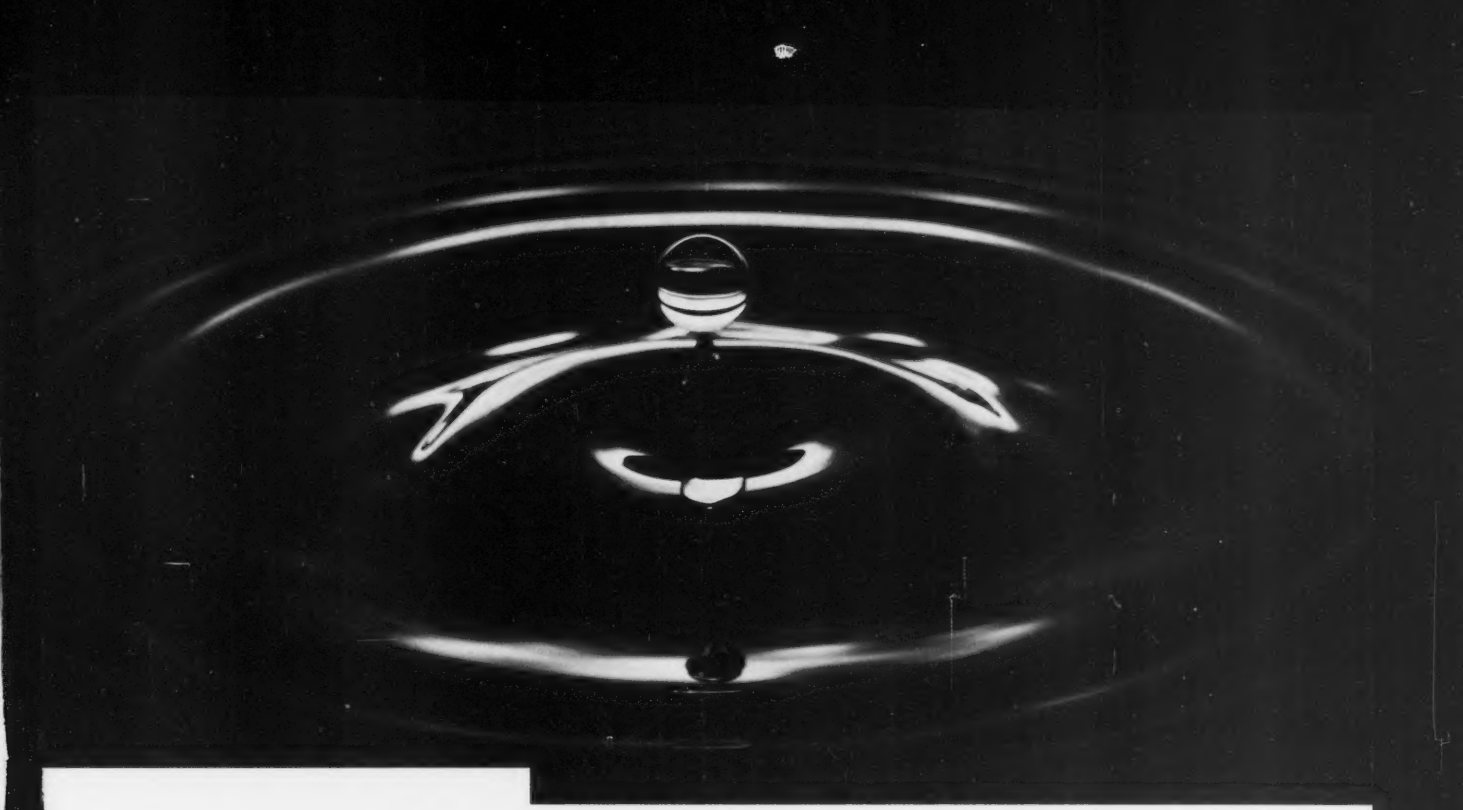
Freebie Unix

The Linux kernel is covered by GNU Public license, which means it can be freely copied, changed and distributed

The Linux operating system features include multitasking, virtual memory, shared libraries, demand loading and TCP/IP networking

A port of Linux to Digital's 64-bit Alpha system would provide a longer virtual address space and make it easier to build large applications





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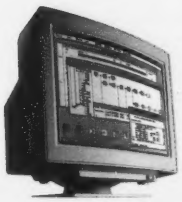
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Sun readies assault on PC server market

By Jean S. Bozman

Sun Microsystems, Inc. will press its pursuit of the PC server volume market this week at Networld/Interop '95 in Las Vegas. SunSoft, Inc. will announce a suite of packaged software applications for the Unix-on-Intel market.

Yet the launch of the Solaris x86 Server Suite is not a break from Sun's aggressive drive to install SPARC-based servers throughout its customers' information systems shops. Analysts took the move with a grain of salt, saying the Unix-on-Intel market is worth roughly $250 million — far smaller than the $5 billion Unix/RISC market Sun already leads.

Price an issue

Even so, some longtime Unix users are clearly interested in the prospect of reduced hardware costs.

"It is something we would pay attention to," said Robert Carter, vice president of corporate systems development at Fedex Corp. in Memphis. "But we would approach it very cautiously mainly because of support issues for distributed servers."

To keep ownership costs low, Solaris PCs would have to fit seamlessly into Fedex's Unix network, which includes Hewlett-Packard Co.'s Unix servers and OpenView network management software, he said.

The x86 Server suite, to be sold by value-added resellers and SunSoft resellers, contains a $1,995 Application Server, a $4,245 PC Network Administration Server and a $1,595 Internet Gateway server, Sun said last week.

SunSoft is trying to win over value-added resellers that already sell Unix-on-Intel software, including Novell, Inc.'s UnixWare and The Santa Cruz Operation's SCO Unix.

"It's the bundling that's new," said Phillip Christian, marketing vice president at Net Information Systems, Inc., a value-added reseller in Seattle that already sells SCO Unix and Solaris x86 systems. "It's for people who are running out of horsepower on their PC LAN."

The server suite could run on many types of Intel Corp. PC servers, including those from Dell Computer Corp. and Compaq Computer Corp., as long as value-added resellers support the suite. Dell said it already supports Solaris x86 software; Compaq said it supports SCO Unix and not Solaris.

Odd man out

Microsoft NT server sales grew 175% between 1993 and 1994, while Novell NetWare server sales grew 31.8% and SunSoft Solaris Unix server sales grew 123.8%, according to International Data Corp. Sales of IBM's OS/2 servers did not grow at all, according to the research firm.

Workgroup competition

If there is a risk of losing hardware sales to PC firms, Sun executives did not acknowledge it. Rather, they stressed the need to pursue head-to-head competition with workgroup servers running Microsoft Corp.'s Windows NT 3.5, Novell's NetWare and UnixWare and SCO's SCO Unix.

Software unit SunSoft will lead this charge rather than hardware unit Sun Microsystems Computer Co., which brings in $4 billion of Sun's total sales.

"We don't go into that market," Sun Chief Executive Officer Scott McNealy said last week, commenting on the PC server arena. "Dell goes into that market; the PC companies go into that market with their machines." McNealy said NT "is going to try to wiggle into the corporate network" as NetWare users make the transition from NetWare 3.x to NetWare 4.x.

The x86 Server Suite will bring Sun into another round of head-to-head competition with longtime nemesis Microsoft. Last year, Sun cooled its rivalry over desktop software systems, saying its Unix enterprise servers would "embrace" Windows PC desktops.

"Who is going to contend with Microsoft?" asked Michael Goulde, a senior consultant at Patricia Seybold Group in Boston. "Sun has some advantages that put it a step in front of the others. They are delivering a top-to-bottom application environment, an object strategy, and they are cross-platform."

SunSoft spring cleaning

In a classic Unix community move, SunSoft cast its bread upon the waters last week by opting to ship copies of its Spring object-oriented operating system to universities for feedback and improvement. Sun executives said Spring is a "clean slate" that the company plans to improve in order to advance its Unix operating system.

Spring is not meant to replace Sun's Solaris Unix operating system, said Jim Mitchell, a SunSoft vice president who has been working on Sun's largest operating system research project since 1989. Rather, it is a way to modify Solaris over time.

Some Spring features, such as support for secure objects, have already migrated into Solaris and will soon appear in Sun's Distributed Objects Environment.

Strictly speaking, Spring is not a Unix operating system but one that emulates Unix for the sake of running the Motif interface, Unix and C++ development tools. Sun charges $75 for a CD containing Spring source code, although Sun retains all commercial rights to the code. Researchers are not required to share their innovations but are required to sign beta contract agreements about Spring's use.

By tapping universities and computer scientists for innovation, Sun is repeating the pattern started when AT&T Corp.'s Unix was modified and enhanced by universities, notably the University of California at Berkeley. —*Jean S. Bozman*

Cisco first out with virtual LAN manager

By Steve Moore

■ Cisco Systems, Inc. in San Jose, Calif., this week is expected to unveil CiscoView, a group of network management applications that fit into the CiscoWorks management platform.

Analysts and sources close to the company said initial CiscoView components will include VLANView for managing virtual LANs and TrafficView for remote network monitoring and performance management.

Virtual LANs promise increased configuration flexibility and reduced administrative costs by allowing software-based creation and modification of LAN segments that span multiple physical LAN topologies.

Some vendors have added minimal virtual LAN management features to net management products, but Cisco is the first to offer management software tailored for virtual LANs.

Late last year, Cisco acquired Kalpana, Inc. in Sunnyvale, Calif., a company known for its switched LAN and virtual LAN technologies.

Cisco users expressed interest in the management tools.

"We'll take a look at [CiscoView]. Any technology that gives you more visibility into the performance and availability of network devices will be helpful," said Ron Welf, manager of performance and capacity planning at Charles Schwab & Co. in San Francisco.

Analysts cautioned users about the immaturity of virtual LAN technology. "The same products that vendors provide for switch or router administration are now being extended to support virtual LANs," said Dave Passmore, a principal consultant at Decisis, Inc. in Herndon, Va. However, he said, "There are no standards, so virtual LANs are defined differently by each vendor," and products for managing virtual LANs are highly vendor-specific.

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While the management features in CiscoView are a good thing, "what we really need is a nirvana where we can interchange agents and consoles, see more interplay between them and plug them into any existing management framework," said Michael Prince, MIS director at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H.

VLANView will be available in the third quarter, sources said.

Terminator

CONTINUED FROM COVER 1

Users applauded UB Networks' move.

"We've had our share of broadcast storms, and they've been a big problem," said Blair Sanders, a senior technical staff member at Texas Instruments, Inc. in Dallas. TI is piloting Access/Empower, he said, and likes "the approach of pushing automation down close to the device being managed." NetStorm Terminator "would let us be a lot more proactive in tracking down the perpetrators of broadcast storms," he added.

Another user said the product adds much-needed mainframelike management capabilities to LANs.

"When tasks go awry on the mainframe we have the tools to correct them, and now [UB Networks is] extending that concept to LANs," said Doyle Friskney, director of communications and network systems at the University of Kentucky in Lexington. "We have a large campus Ethernet network, so anything that helps us avoid broadcast storms would be a significant help."

Analysts said NetStorm Terminator will be particularly helpful to companies using Token Ring LANs. "People are beginning to introduce TCP/IP into Token Ring environments, and that raises the potential for broadcast storms," said Dave Passmore, a principal at Decisis, Inc. in Herndon, Va.

While the traditional way to minimize broadcast storms has been to break large networks into subnets and deploy routers, "it looks like [NetStorm Terminator] will enable that via hubs," he said.

Users implementing switched LANs will also benefit because "a LAN switch is basically a multiport bridge, so we're back to creating these big bridged networks," Passmore said. But as routers typically are deployed less often in switched LAN environments, "the broadcast storm issue can raise its head again," he warned.

Analysts said NetStorm Terminator is a bellwether of things to come. "It's one of first products that takes advantage of new management functions built into intelligent hubs," said Rick Villars, a director at International Data Corp. in Framingham, Mass. "We think this will be a trend across all the hub players this year."

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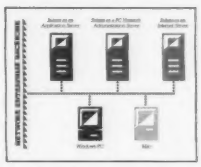
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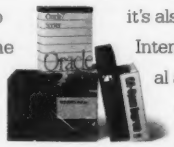


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Intel to unveil 120-MHz Pentium

PC vendors respond with a flood of announcements

By Jaikumar Vijayan

Intel Corp.'s redefinition of the high-end PC continues. Today the company will announce its new 120-MHz Pentium processor — the fastest chip in the rapidly increasing Pentium processor family. The chip will be available in volume quantities immediately.

The chip is based on Intel's new 0.35-micron process technology and will deliver an estimated 140 SPECint92 performance, according to Intel. SPECint is a benchmark used for measuring the integer perfomance of a processor.

However, timing problems associated with the tiny die size of the chip render it unsuitable for use in certain dual-processor implementations and will limit initial versions of the chip in uniprocessor systems, an Intel spokeswoman said. A larger, 0.6-micron version of the chip, scheduled to ship in the summer, will support all dual-processor and multiprocessor implementations, she added.

Intel's product road map for the year also includes a 133-MHz version of the chip, rumored for a third-quarter release, that will mainly target the server and symmetrical multiprocessing marketplace.

Several major PC vendors are also slated to announce aggressively priced desktop PCs — and in some cases server products — based on the new chip. Compaq Computer Corp., Dell Computer Corp., Hewlett-Packard Co., Gateway 2000, Inc. and several other manufacturers will announce products based on the 120-MHz chip today.

HP's new Vectra VL PCs will feature 8M bytes of RAM and a 420M-byte hard drive at an estimated street price of $2,650. Gateway's new tower model P5-120 system will feature 16M bytes of RAM, a 1G-byte hard drive and a quad-speed CD-ROM, and it will retail for $3,999. Dell's new OptiPlex X5120 systems will start at $2,585 with 8M bytes of RAM and a 270M-byte hard drive.

Meanwhile, Compaq will announce today much higher-end servers based on the new chip. They are expected to sell for about $12,749 with 16M bytes of RAM and a 4G-byte hard disk.

However, users will have to wait until late June or early July for server products based on the processor to ship in volume.

Full speed ahead

As Intel announces its 120-MHz Pentium processor, mainstream corporate PCs have begun to offer a lot of features, including the following:

- Pentium 60-MHz, 75-MHz and 90-MHz processors
- At least 256K-byte second-level cache
- 8M- to 16M-byte RAM standard
- Up to 1G-byte hard drives
- PCI local bus
- PCI/EISA expansion slots
- Up to 2M-byte video RAM, business audio
- Quad-speed CD-ROMs
- Management software, preinstalled network interface cards

For users, such aggressive pricing of PCs based on the new chip will accelerate the migration of systems built on the current high-end 90-MHz and 100-MHz Pentium processors into lower-cost mass volume PC markets, analysts said. Currently, systems based on these chips come in at the higher end of the price spectrum.

Market potential

Products based on the 60-MHz and 66-MHz versions will increasingly settle in at the low end of the corporate market where I486-based systems now reside, said Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

According to Munson, the market could eventually consolidate around tiers of systems based on the 75-MHz, 100-MHz and 120-MHz chips because of the significant price and performance deltas between each of them.

"For the stuff we are doing right now, we don't need the new chip," said Peter Yee, a microcomputer specialist at Berlx Laboratories in Richmond, Calif. Yee said he is interested in the announcement, however, because of the potential impact it will have on 90-MHz system prices.

Object request brokers gain ground

By Elizabeth Heichler

BOSTON

Organizations that want to explore using object request broker technology in their distributed applications still have precious few commercial products available. But the picture improved slightly at last week's Object World.

Commercial implementations of the Common Object Request Broker Architecture (CORBA) standard are proliferating across more platforms, as are the tools used to work with them. In addition, two vendors, Digital Equipment Corp. and Iona Technologies Ltd., showed their request brokers working with Microsoft Corp.'s Object Linking and Embedding (OLE) technology, integrating a Windows desktop application with distributed object services.



Object request brokers manage the interaction among objects distributed around a network. Their functionality will expand to include services such as those provided by transaction processing monitors, rendering those products obsolete, said Curt Monash, president of Monash Information Services in New York.

"By the time we have true, widespread distributed computing, it will be CORBA-based," Monash said.

Time to decipher

But while many pundits predict that object request brokers will one day be ubiquitous in networked systems, users are trying to gather enough information to make up their minds.

"It's hard to get past the hype and get down to what it really means" was the consensus of three attendees from The Mutual Life Assurance Co. of Canada in Waterloo, Ontario. Mutual Life has a homegrown request broker that the information systems department wrote for a mainframe, but the company is now considering a plan to put a CORBA-compliant broker on each of its hardware platforms, a spokesman for the group said.

Still, the users said they were unsure exactly how they would proceed with a distributed object environment.

"I came to find out the reality of CORBA," said a project team coordinator from a New York state manufacturer. His assessment was that it is "almost there." He also said he was glad to see the work Digital has done with Microsoft's OLE.

"It validates OLE as a viable way of delivering services to customers," said the team coordinator, who asked not to be named.

At Object World, several vendors announced broader platform support for their commercial object request brokers. Digital said it is shipping its ObjectBroker for OS/2 and Sun Microsystems, Inc.'s Solaris. Logica, Inc. announced ObjectBroker for Tandem Computer, Inc. systems. Meanwhile, Iona has versions of its request broker under development for OS/2, the Macintosh and Digital's OpenVMS, company officials said.

On the tools front, British computer company ICL has brought to the U.S. its application development software, DAIS, which conforms closely to the CORBA model and can be used to develop distributed object applications. It has also introduced two distributed applications that use CORBA to transparently share data and services around a network: PowerVision, an imaging application, and RoleModel, a workflow management system.

Meanwhile, NetLinks Technology, Inc. in Nashua, N.H., unveiled a release of its multiobject request broker application development tool, ORBitize, which runs on Windows, Windows NT, SunOS, Solaris and OS/2.

Wireless software catches users' eye

By Michael Fitzgerald

■ Racotek, Inc. will announce the first customers tomorrow for its KeyWare environment.

KeyWare is an operating environment that lets users integrate incompatible networks, including various wireless networks. It also provides a single application programming interface for developers [CW, Jan. 30].



The users, to be announced in Las Vegas at Networld/Interop '95, will include The Hertz Corp. and Viacom, Inc. Another new customer for KeyWare is Minnegasco, Inc., which sells gas services to consumers in the upper Midwest.

Get off the bus

Hertz uses Racotek's Raconet, which integrates Specialized Mobile Radio (SMR) networks. Hertz uses wireless to enable its bus drivers to notify the reservations desk when Hertz Gold members are on their way to pick up their cars.

While Hertz outfits each bus with a portable PenKey handheld terminal from Norand Corp., wireless transmission requirements force drivers to use these terminals only in a wireless base station onboard the bus.

KeyWare, in combination with wireless PCMCIA modems, will let the drivers wire in notifications from the curb, according to David Meritt, project leader at Hertz's Oklahoma City data center.

Merritt said Hertz wants "to use a mixture of the [wireless] networks," one of the main benefits of KeyWare. He estimated Hertz will spend nearly $1 million to upgrade 20 airport locations, including the cost of buying the modems. Over time, Hertz may expand its use of KeyWare to other airports.

Viacom is expected to outfit the 87 field service technicians in its San Francisco cable operation with KeyWare. Minnegasco could not be reached for comment.

The customer news was positive for Racotek, which has struggled financially in the past two years. Analysts also said a handful of prominent new users of wireless was a rare bit of good news for that underwhelming market.

Still, "are these people jumping into the wireless pond feet first? It looks more like they're sticking in their toes," said Iain Gillot, an analyst at Link Resources Corp. in Framingham, Mass.

Software helps LAN managers build monitoring tools

By Patrick Dryden

To ease management of networks with less than 1,000 nodes, Thomas-Conrad Corp. and Castle Rock Computing, Inc. are each planning to provide Windows-based software that reportedly helps even novice administrators build monitoring tools for diverse devices. The software is expected in April.

Both tools create graphs, gauges and other displays to poll networks for performance and problems. They help administrators of small or remote networks make sense of the bewildering array of status data offered by their network components.

"These tools are part of the drive to bring down the cost of supporting distributed computing," said Theo Forbath, a consultant at Northeast Consulting Resources, Inc. in Boston. "Hardware always gets cheaper, but management gets more complex and expensive."

Thomas-Conrad's entrance into the low-end management market is significant, analysts and beta testers said. Its Sectra Management System targets smaller networks that lack sophisticated support staff. Its price is less than half that of leading Unix and Windows LAN management platforms, Thomas-Conrad officials said last week.

Sectra provides a browser and Management Information Base compiler that helps users create custom report and alarm screens with on-line help, said Peter Rauch, director of product marketing at Thomas-Conrad in Austin, Texas. It will be available from Thomas-Conrad resellers at $895 for unlimited use.

The easy route

Sectra offers an independent manager for devices from vendors that comply with Simple Network Management Protocol (SNMP) standards, but it provides the base for the company's upcoming intelligent hubs and adapters with SNMP agents, Rauch said.

"They're trying to leapfrog vendors whose management solutions often are too specific and complicated for administrators getting into automated management," Forbath said.

Beta testers at the School of Hotel Administration at Cornell University in Ithaca, N.Y., used Sectra to examine traffic and monitor problems on a 350-node LAN.

For managing some functions of the LAN's hubs and workstations, Sectra was "more intuitive [and] easier to set up and use than others I've tried," said Carl Drescher, network operations manager at the school.

Sectra "isn't a cure-all platform like OpenView or SunNet Manager, but it does a basic job just fine," said beta tester Tom Henderson, engineering vice president at Unitel, Inc., a systems integrator in Indianapolis.

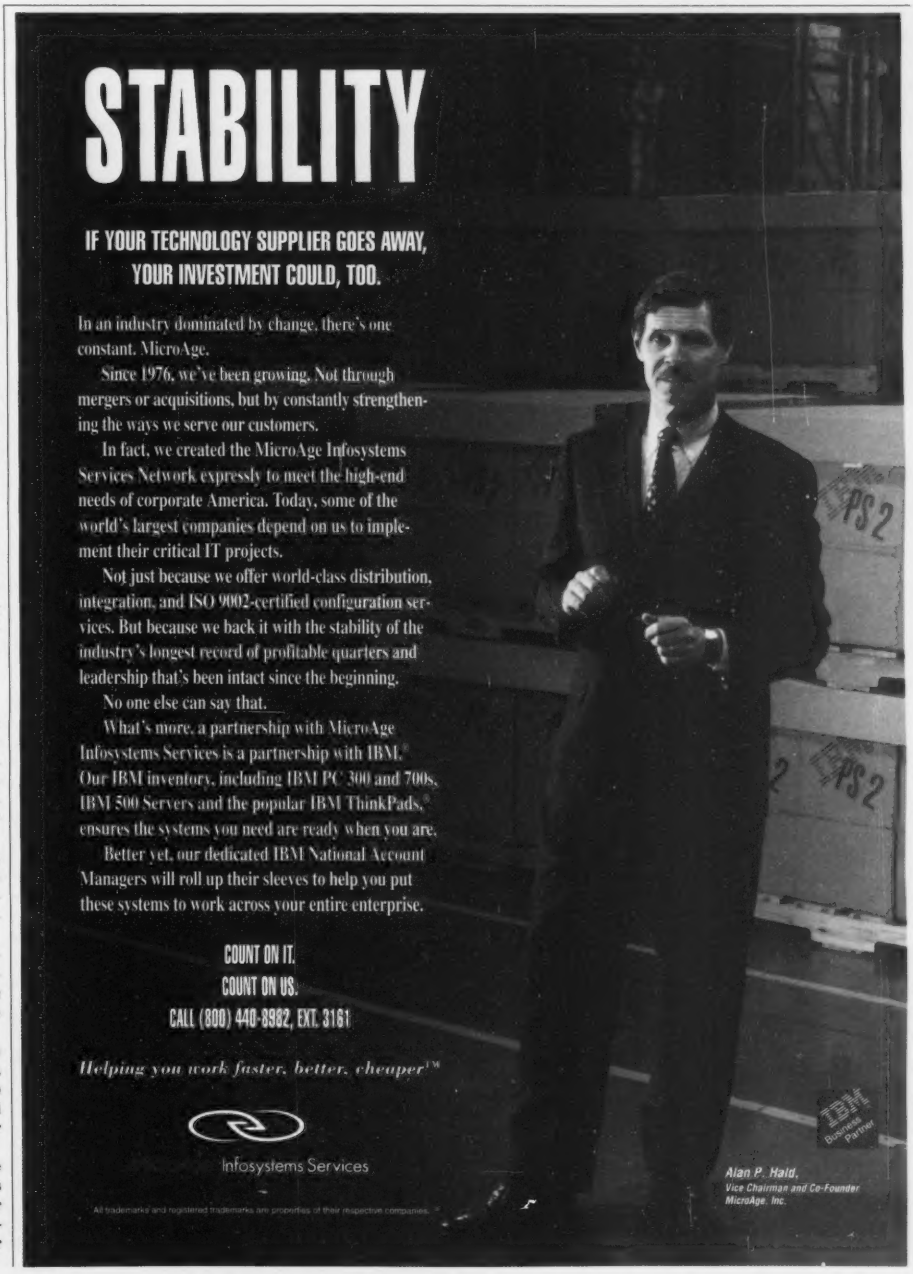
Henderson recommended Sectra as a good first SNMP manager for LAN administrators and remote site systems staff because of its simplicity and "vendor neutrality."

However, other Windows-based consoles claim ease of use as well as the ability to support the growing swarm of SNMP devices.

Castle Rock in Cupertino, Calif., has offered SNMPc Network Manager for Windows, a $795 package similar to Sectra, for two years. The company's Version 4.0 with additional capabilities will be introduced this week at Networld/Interop '95 and ships next month.

The feature set will include support for Remote Monitoring (Rmon) applications, internetwork packet exchange protocol for Novell, Inc.'s NetWare networks, trap forwarding and extended communications, said Don LaMure, Castle Rock marketing manager.

Sectra will not get Rmon and some other capabilities until later this year, Rauch said, but it does work with other SNMP-based applications.



Web servers move in different directions

Netscape, Spyglass also employ dueling security

By Ellis Booker

■ Netscape Communications Corp. and Spyglass, Inc. this week will unwrap Hypertext Transfer Protocol (HTTP) servers for Unix and Microsoft Corp.'s Windows NT. But the pair is taking dramatically different approaches to the market.

Spyglass, with its first server, hopes to deliver a $100-per-seat platform to its many OEM customers, which can then be expected to offer low-cost commercial products later this year.

Netscape, by comparison, is expanding its server line and adding high-end, preconfigured servers for vertical markets priced in the $20,000 to $50,000 range.

The Spyglass Server, which will be demonstrated at the Internet World conference April 11-14 in San Jose, Calif., will be licensed for less than $100 per copy in volume to its OEM customers in July. The Naperville, Ill., company is responsible for commercializing and licensing Internet browser and server technology from the National Center for Supercomputing Applications at the University of Illinois.

"Their real goal is to get their OEMs to add value" such as services like search engines and reporting tools, said Jay Batson, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Distinguished mark

Along with its low price, the Spyglass Server is distinguished by a modular, open architecture and support for the Simple Network Management Protocol (SNMP). The inclusion of an SNMP interface for server management — which will be offered initially for monitoring and later this year for command and control — is believed to be the first for a Web server.

Netscape, in Mountain View, Calif., will offer new releases of the servers it has been selling since December. More important, it will announce the Netscape Internet Applications, a family of turnkey systems for high-volume applications. Two of these $50,000 systems, Netscape Merchant System and Netscape Publishing System, will ship by midyear. A third, Netscape ISTore, will also ship by midyear. It will be aimed at individual business owners and will start at $20,000. A fourth, Netscape Community System, will ship later this year.

Platters of servers

Netscape Communications Server 1.1 ($1,495)
- Supports Windows NT
- Supports Unix
- Free upgrade from Version 1.0

Netscape Commerce Server 1.1 ($5,000)
- Supports Windows NT
- Supports Unix
- Free upgrade from Version 1.0

Netscape News Server ($2,495)
- Supports Unix only
- Uses Secure Socket Layer

Netscape Proxy Server ($2,495)
- Supports Unix only
- A Secure Socket Layer-based server for use behind a firewall

All the offerings will include the secure Netscape Commerce Server, transactional support — for functions such as credit-card processing, billing and order processing — and an embedded relational database. The initial database will be from Oracle Corp.

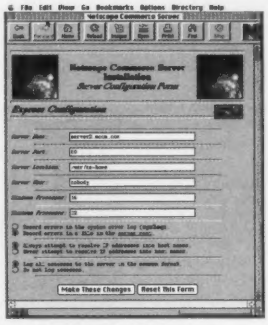
In addition, Netscape will add a Network News Transport Protocol (NNTP) server and a proxy server to its product line (see box at left). NNTP servers store incoming news feeds; proxy servers work behind secure fire walls.

"The proxy and [API] support is the most significant thing for us and our clients," said Brian Anderson, executive vice president at Gillespie, Inc. in Princeton, N.J.

Anderson said it was "simple" to cost-justify Netscape's premium price for its servers. "Their support has been stellar," he said. "We see the cost as a small investment to our long-haul venture, and we see Netscape as a long-haul venture."

Security split

Netscape and Spyglass each will release an application programming interface (API) for integrating other applications into their server platforms. But perhaps the key difference between them is their approach to security.



Netscape Commerce Server's *advanced user interface will be common to all new Netscape servers*

Spyglass' server will implement Secure Hypertext Transfer Protocol (SHTTP), an application-layer security protocol now in draft form before the World Wide Web Consortium.

Netscape, meanwhile, is pushing its own Secure Socket Layer (SSL) technology, a security protocol that sits between the application and TCP/IP layer.

Netscape has argued that SSL is superior because it can secure any TCP/IP application, such as electronic-mail, news and file transfer protocol. So far, a "who's who" list that includes Apple Computer, Inc., Bank of America, IBM, Novell, Inc., MCI Communications Corp., Microsoft Corp. and Sun Microsystems, Inc. has thrown support behind SSL.

Industry analysts, however, said they believe the debate over SHTTP and SSL will be resolved in favor of SSL — either because SSL will be endorsed by a standards body such as the World Wide Web Consortium, or, more likely, because Netscape will succeed in its apparent effort to make it a de facto standard.

At least some vendors are covering their bets. Two weeks ago, for instance, Open Market, Inc. in Cambridge, Mass., introduced an HTTP server supporting both SHTTP and SSL.

RAM gap opens

CONTINUED FROM COVER 1

"To just bring each desktop up to 8M bytes of RAM would be a big economical issue for us," Tobias said.

To bring 4M-byte desktop systems up to 12M bytes of RAM would cost $400 per PC for the chips alone, according to Dataquest, Inc. researchers. And users said it would take 30 to 60 minutes to upgrade each machine.

On hold

At Fiserv, Inc. in Orlando, Fla., RAM requirements will not be explored until Windows 95 and the applications ship, said Allen Kramer, a systems engineer.

"First, we'd have to manually go out and see who has what kind of SIMMs [RAM chips] in their machines," Kramer said. "Those machines with 2M-byte SIMMs would have to be discarded, and we'd have to start all over. Only those machines with open slots would be upgradable."

It would take four people "two days all-out to do this," Kramer estimated.

Current costs for upgrading from 4M bytes of RAM to 8M bytes — according to estimates from major vendors — range from $150 to $200. But with the volatility of the memory market, this could change significantly over relatively short periods of time, the vendors warned.

The reasons for the memory increase are logical ones, analysts agreed. With multitasking, users will increase the number of RAM-hungry sessions they run as background processes, such as network connections or database queries. Also, Windows 95 applications will include standard Object Linking and Embedding (OLE) 2.0 support, and users may need up to 16M bytes of RAM to comfortably use them, analysts said.

> **"Definitely, more RAM is better. But it's a business decison that the resellers have to make."**
> — Mike Conti, group manager, Microsoft Corp.'s personal systems division

Give me more

Users will also need more storage space to run their applications.

In a survey of 400 users, International Data Corp. (IDC) in Framingham, Mass., found that users will run an average of 15 or more applications on Windows 95 — a 25% increase over the average dozen applications they run on Windows today. Three fully loaded Windows applications could easily absorb up to 100M bytes of storage space.

These dynamics could have broad implications for users as they move to Windows 95, analysts and users said. According to IDC, 16.8 million units of Windows 95 will hit the market next year. Of these, more than half will be upgrades.

Microsoft officials acknowledge it would be beneficial to users if resellers loaded more than 8M bytes of RAM on the PCs that will come bundled with Windows 95.

"Definitely, more RAM is better," said Mike Conti, group manager of the personal systems division at Microsoft. "But it's a business decision that the resellers have to make."

Distributors and resellers have begun to ramp up their standard memory configurations in anticipation of the Windows 95 migration. Today, many PCs come standard with at least 8M bytes of factory-installed RAM — double the amount only six months ago.

For instance, the more recent Intel Corp. Pentium-based systems from major vendors come equipped with 8M bytes of RAM as standard fare. Some vendors think that by the time Windows 95 makes its scheduled debut in August, standard configurations may be more in the 16M-byte range.

Climbing the ladder to Windows 95

Requirements	Memory
Minimum for running Windows 95	4M bytes
Minimum for running Office for Windows 95	8M bytes
Recommended for running Office for Windows 95	12M bytes
Recommended for utilizing OLE in Windows 95	16M bytes

Source: Industry experts

Paul Gillin offers 25 ideas on how to pass the time while waiting for Windows 95. See Editorial, page 36.

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No external tools necessary to build new components or extend environment	✔	–	–
Combines high-performance compiler, visual environment, reusable components, and scalable database tools	✔	–	–
Robust exception handling	✔	–	–
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Client/server version available	✔	✔	–

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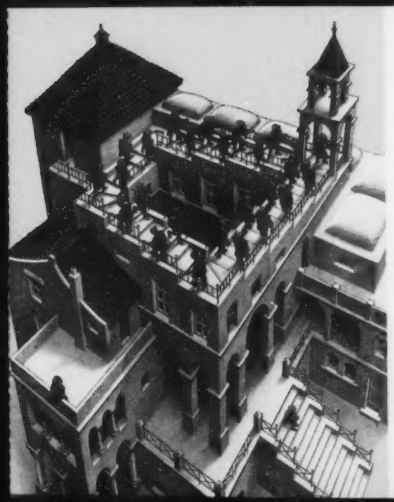
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Network 'sniffer' tool checks on database activity

By Steve Moore

Network management vendors are beginning to offer tools that will allow users to determine whether there is a connection between network problems and database activity.

By helping to minimize finger-pointing between network service providers and application vendors, these kinds of management tools can help remove one obstacle to rapid client/server application deployment, said Rob Enderle, an analyst at Dataquest, Inc. in San Jose, Calif.

For now, problems involving applications that pump data across networks are concentrated mainly in very large organizations that are implementing client/server networks, Enderle said.

One of the first products to address this issue comes from Network General Corp. in Menlo Park, Calif., which recently added features for managing Oracle Corp. databases to its Sniffer products.

Network General's Database Module for Oracle7 SQL Net performs protocol decodes and monitors client-to-server and server-to-client response times. The company claims it will help users determine where database performance problems originate.

Analysts applauded the release of the product. "What database administrators wanted all along was to understand how their applications are running, and whether the network runs well or poorly is secondary to that," said John McConnell, president of McConnell Consulting Co. in Boulder, Colo. With the Network General protocol decodes, users can correlate database activity more closely with network behavior, he added.

But one analyst cautioned about the limitations of protocol decodes. "The best you can do with protocol decodes is assess throughput on a LAN or determine that database latency appears to be excessive," said John Morency, principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

On sale now

Network General's Database Module for Oracle7 SQL Net is available now for stand-alone Sniffer network analyzers, while a module for the Distributed Sniffer System will ship by midyear. Initial prices are $1,495 per Sniffer topology and $795 per Distributed Sniffer System server.

Beyond that, database administrators must turn to "a completely separate world" of arcane, database-specific tools because "many database issues related to response time have nothing to do with the network at all," he said.

Users were intrigued by Network General's Database Module, but some said their database installations do not require such tools.

"If we were using Oracle in on-line transaction processing [OLTP], we would consider this to be a valuable tool," said Glen Belden, executive vice president of technology at the Chicago Stock Exchange. But because the stock exchange uses Oracle primarily for archival data that is not OLTP-related, the performance management capabilities provided by the Network General module "are not as high on our list," Belden said.

Database performance management "is not one of those things that has percolated to the top of the problems we're trying to solve," said Ron Tipton, manager of the Unix systems group at the University of Tennessee in Knoxville.

Unocal Corp. in Anaheim, Calif., which uses Oracle databases and Network General's Sniffer, also has not yet run into significant database performance problems, said Peter Ho, Unocal's supervisor of network architecture. But as the company moves from mainframe-style computing to a client/server approach, "we will be needing down the road to be able to decode Oracle protocols," Ho said.

Users turn to Cabletron's Spectrum for network control. See page 68.

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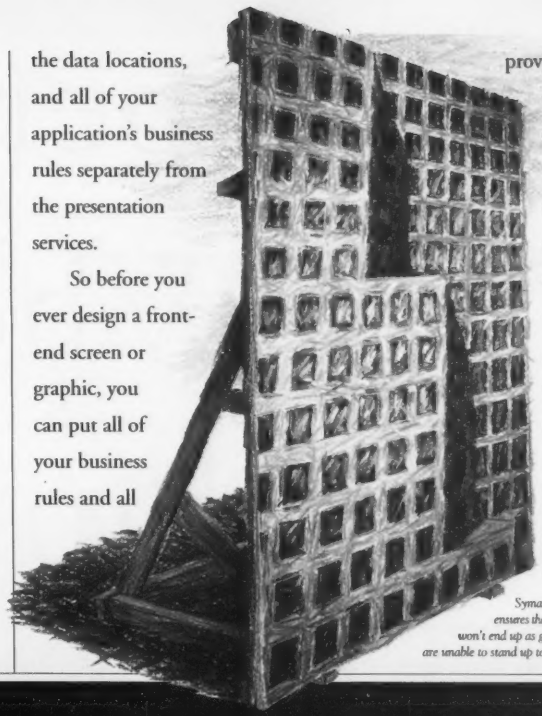
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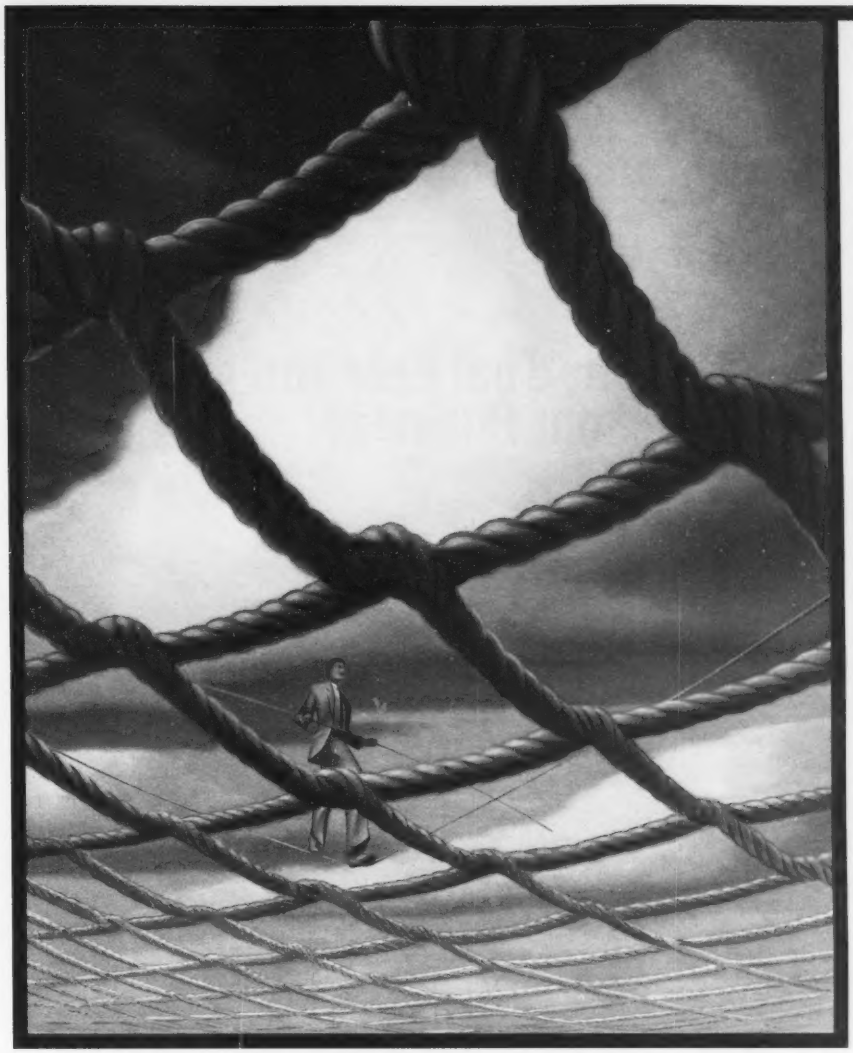
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Companies see cost savings through transparent LANs

By Stephen P. Klett Jr.

Corporations are starting to outsource LAN data services to telecommunications providers in an effort to dramatically trim network costs and complexity.

Paving the way for such measures is a partnership announced last week between Stratacom, Inc. and NetEdge, Inc. as well as products unveiled by Newbridge Networks, Inc. Both efforts will enable carriers to provide transparent LAN data services using Asynchronous Transfer Mode (ATM).

StrataCom in Santa Clara, Calif., will resell NetEdge's ATM router for use with its BPX wide-area switch. The NetEdge router acts as an interface between users' legacy LANs and a carrier's BPX-based wide-area ATM network.

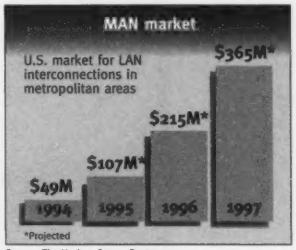
Separately, the Herndon, Va.-based Newbridge Networks unveiled Ethernet and Token Ring service units for use with its MainStreet line of wide-area ATM access switches.

Each of these approaches was designed to enable carriers to provide end-to-end delivery and management of transparent LAN services in metropolitan-area networks (MAN) over ATM. The transparent LAN services deliver native LAN interfaces such as Ethernet and Token Ring to the customer, which allows users to connect their LANs to carrier-provided and managed internetworks.

"Users can now go to telcos and say, 'Give me data the same way as voice,'" said Al Bender, president and chief executive officer at NetEdge in Raleigh, N.C. "Users don't need to understand all of the intricacies of wide-area ATM to get into it."

Lifting the burden

By offering transparent LAN data services, telecommunications companies effectively remove much of the burden of managing multiple private-line connections from the end user, dramatically cutting users' LAN interconnection costs.



Source: The Yankee Group, Boston

For example, a private T1 connection typically costs $550 a month, while a higher-speed DS-3 connection can run as much as $45,000 per month. Users absorb the installation costs for private connections as well. Access to a shared LAN provided by a regional Bell operating company can cut these costs by more than half, observers said. This makes shared-carrier networks more attractive to users trying to cope with exploding network growth and the evolution of new technologies.

"Users are trying to get rid of their LANs," said Jennifer Pigg, an analyst at The Yankee Group, a market research firm in Boston. "Management of LANs and personnel and the complexity of technology are driving users to outsource their LANs in one manner or another."

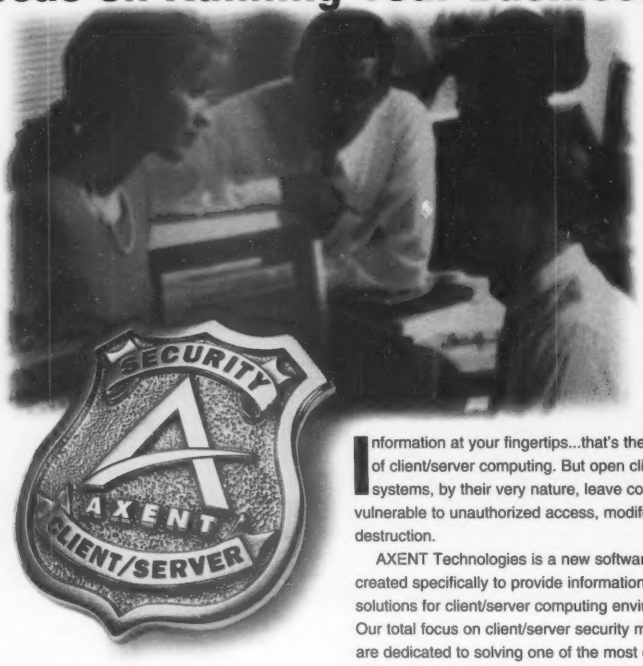
"Technology is getting very complex and difficult to manage," said Mary Diner, wide-area infrastructure manager at 3M Co. in St. Paul, Minn. "We're definitely looking to off-load that burden to vendors in the most efficient way we can."

However, despite a healthy growth forecast, the metropolitan data services market represents a relatively insignificant fraction of the overall $84 billion telecommunications market (see chart).

Analysts said they expect this to change quickly. Some 30% of all domestic users are interested in carrier-based internetworking services, according to International Data Corp. in Framingham, Mass.

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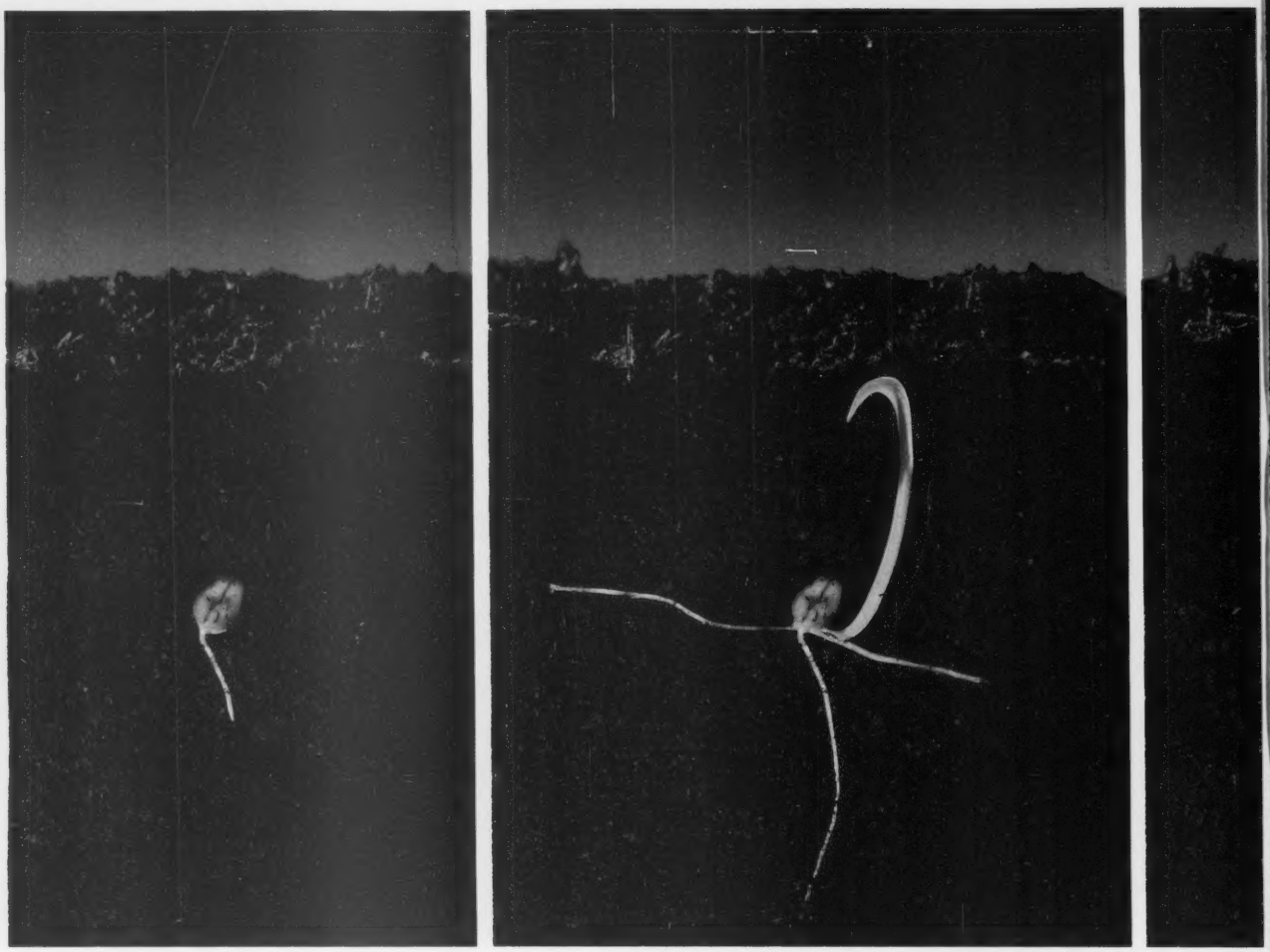


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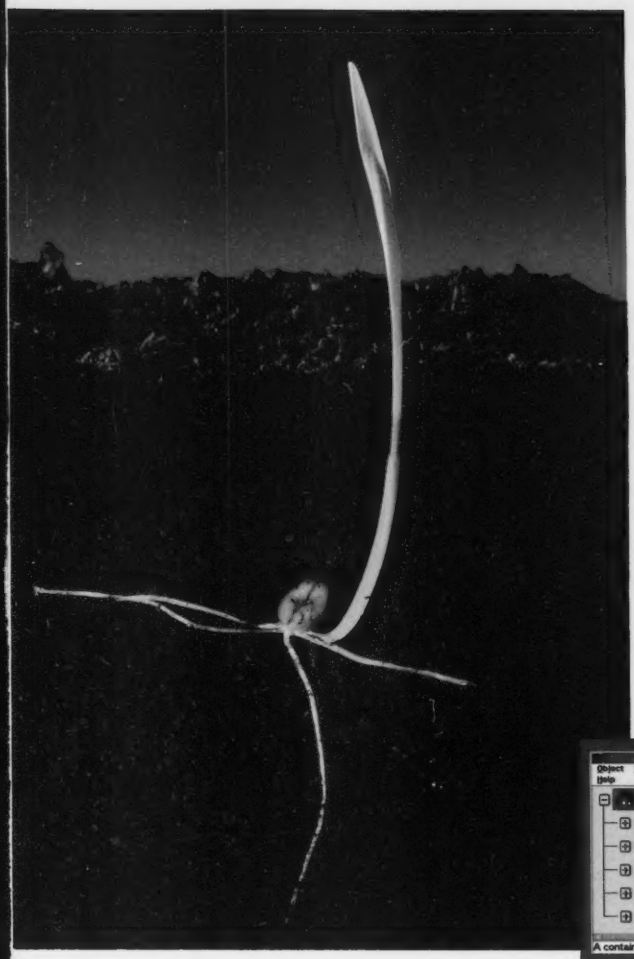


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Geographic information systems

Oracle extension puts mainframe data on the map

By Mitch Betts

For years, geographic information systems (GIS) and an organization's "real" database management system have been like oil and water: foreign elements that do not mix.

But that may start to change with Oracle Corp.'s announcement this week of Oracle MultiDimension, an extension to the Oracle 7.x relational database management system that is familiar to many information systems shops.

MultiDimension allows spatial data — the coordinates that put data on a map — to join the rest of the corporate data in the same relational database tables. An insurance company, for example, could query the single data warehouse to show which customers have homes near flood plains.



Oracle's MultiDimension *acts as a server linked to front-end desktop mapping products such as MapInfo, above*

Acting server

In essence, MultiDimension acts as a geographic data server that is linked to front-end desktop mapping programs from companies such as MapInfo Corp. in Troy, N.Y., and Strategic Mapping, Inc. in Santa Clara, Calif.

"This puts geographic data management and geographic queries into mainstream information systems. It takes GIS to an enterprisewide level," said John Szajgin, director of commercial GIS at TASC, Inc.'s Reston, Va., office.

TASC, a systems integrator and beta tester, has already built MultiDimension systems for two (unnamed) government agencies. One application allows an analyst to use a mouse to draw a box around a region of the on-screen map and query the database for attributes of that area, Szajgin said.

Today's desktop mapping systems can download data from corporate mainframes. But Oracle accomplished the feat of blending spatial and tabular data by developing an algorithm to encode geographic data such as latitudes and longitudes into a single relational column.

"The product is not difficult to install or work with, but the spatial dimension does require a different way of thinking about your data model," Szajgin added.

Initially, Oracle is targeting government agencies and their massive geographic databases, but an Oracle executive said the next step will be the commercial market for on-line analytical processing.

MapInfo and Oracle said they plan to collaborate on commercial versions of the product. Strategic Mapping this week will announce an application development tool kit that supports MultiDimension.

Afshin Khoddam, vice president for application development at CB Commercial, Inc., greeted the news enthusiastically. Brokers for the Los Angeles-based real estate firm already can show clients the location of particular properties on PC maps.

But Khoddam said he is eager for a more transparent method of transferring data from an Oracle database to the MapInfo application.

"Now we have to do lots of coding. I'm hoping [MultiDimension] will be cheaper than in-house programming and a lot cleaner," he said.

MultiDimension will be available in May on SunSoft, Inc.'s Solaris, Digital Equipment Corp.'s OSF/1 and Hewlett-Packard Co.'s HP-UX operating systems, with others to follow. The add-on price is $4,520 for an eight-user license.

A marriage of GIS mapping and logistics algorithms predicts repairman or delivery arrivals within two hours. See page 40.

IRS

CONTINUED FROM COVER 1

in its $7 billion tax systems overhaul. The agency hopes to have 80 million returns filed electronically by 2001 — five times the number expected this year.

The IRS also reported that it had issued 17% fewer refunds than it had last year at this time, largely as a result of the crackdown. The agency said 4 million of the 32 million returns processed so far will be delayed, many of them for up to eight weeks.

The setback for electronic filing is a lamentable but unavoidable by-product of the agency's antifraud efforts, IRS officials said.

Those efforts include the strengthening of up-front computer validations performed on electronic returns. For example, the IRS now matches Social Security numbers on all electronic returns against Social Security Administration records. Previously, this was done on a spot-check basis. Additional checks are performed to verify names and birth dates and to ferret out duplicate returns.

"Our original projections did build in a growth pattern for electronic filing, but we as an agency felt we needed to do what we had to do," said Peggy Rule, electronic filing executive at the IRS. "And that's what we did."

Rule refused to say how many of the millions of electronic returns rejected this year might represent fraud attempts, only that the returns were "noncompliant." She also declined to detail how the agency identifies suspicious returns, saying that knowledge could help "fraudsters."

Rule said the gap between the number of electronic filings this year and the number last year is narrowing each week.

And despite the delays, Rule said electronic filing still offers several advantages, including greater accuracy and faster turnaround. Electronic filers learn of problems with returns within 48 hours, whereas those mailing in paper returns typically wait six to eight weeks.

"We agree with what the IRS is doing," said David Attianese, an assistant director at the U.S. General Accounting Office. "In fact, we've said it might be appropriate to delay these refunds even longer."

Yet Attianese acknowledged that the drop in popularity of electronic filing chips away at one of the cornerstones of the IRS's tax system modernization program. "The way things were going, it was going to be difficult to meet their goal of 80 million electronic returns anyway," he said.

The IRS has made many fundamental, long-term decisions about systems infrastructure based on its forecasts for electronic filing, Attianese added.

While only 12% of individual tax returns were filed electronically last year, 43% of all returns found to be fraudulent had been filed electronically, according to the IRS. The most common type of fraud involved false claims for the earned-income tax credit (EITC), a refundable credit.

While the more stringent computer edits are clearly thwarting some fraud attempts, they are also causing an unpleasant side effect for some legitimate filers, according to the Electronic Filing Coalition of America in Washington. The group represents tax preparers and banks that make loans tied to anticipated refunds.

Gary Perkinson, coordinator for the coalition, said the electronic returns of 1 million single heads of households who claimed the EITC were set aside for closer scrutiny. This was done not because of any evidence of noncompliance, but solely because EITC claimants are considered high-risk filers.

While most of those 1 million filers might have had refunds within 48 hours last year, they must wait up to eight weeks this year, according to notices by the IRS. Some 7 million filers will get such notices by April 17, the IRS said.

Another change this year is that delayed EITC payments will be made by check sent to the tax preparer rather than by direct deposit to banks to cover refund anticipation loans.

Critics of the IRS's actions say lenders consequently view these loans to tax filers as riskier and are less likely to grant them, further punishing low-income tax filers, who are most likely to claim the tax credit.

Lenders have been spooked further by the IRS's decision this year to stop certifying whether tax filers have outstanding debts with other federal agencies that might have first call on their refunds.

Several banks, including Mellon Bank Corp. in Pittsburgh, have dropped their refund anticipation loans programs completely, citing recent IRS actions as the reason.

Tax facts

	1994	1995	Percent change
Individual tax returns processed	36.4M	32.3M	-11.4%
Electronic returns received	11.6M	9.4M	-19.0%
Number of refunds issued	27.1M	22.4M	-17.3%
Total amount refunded	$29.2B	$23.3B	-20.1%

Figures are as of 3/11/94 and 3/10/95

Source: Internal Revenue Service, Washington

Match game

While the IRS seems to be making progress at catching fraud attempts in electronic filings, it still lacks the capability to match electronic returns against wage statements from employers.

At present, wage statements go to the Social Security Administration and later to the IRS, too late to influence the processing of electronic returns.

However, one new system in the IRS's system modernization program will enable electronic transmission of W-2 statements, which will make that information available in time to match with electronic returns.

Meanwhile, the IRS is experimenting with neural network software developed at the Los Alamos National Laboratory in New Mexico to find fraud patterns in torrents of data. Although the IRS will not say just how it is using the technology, the laboratory said it could be used to scan hundreds of returns from the same tax preparer to look for suspicious patterns.

—Gary H. Anthes

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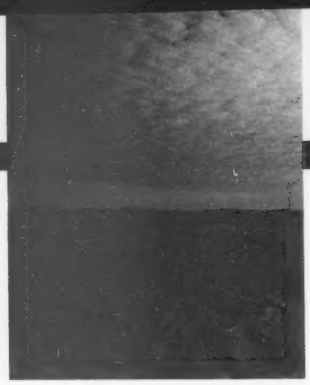
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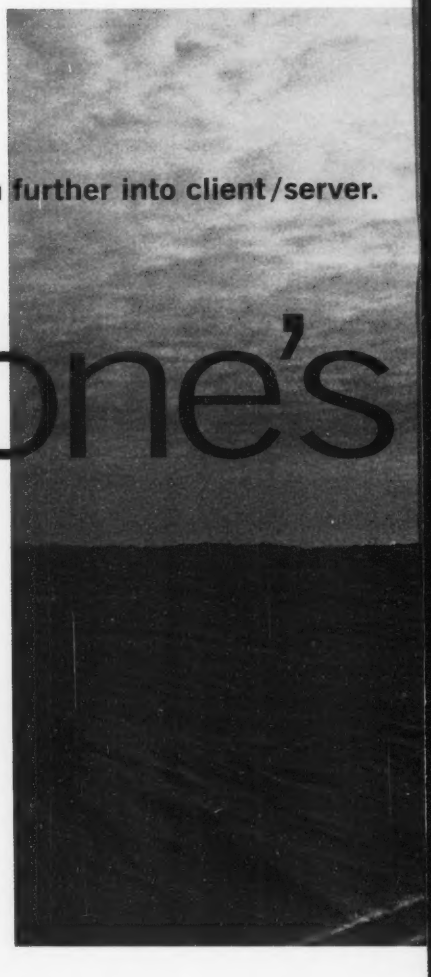
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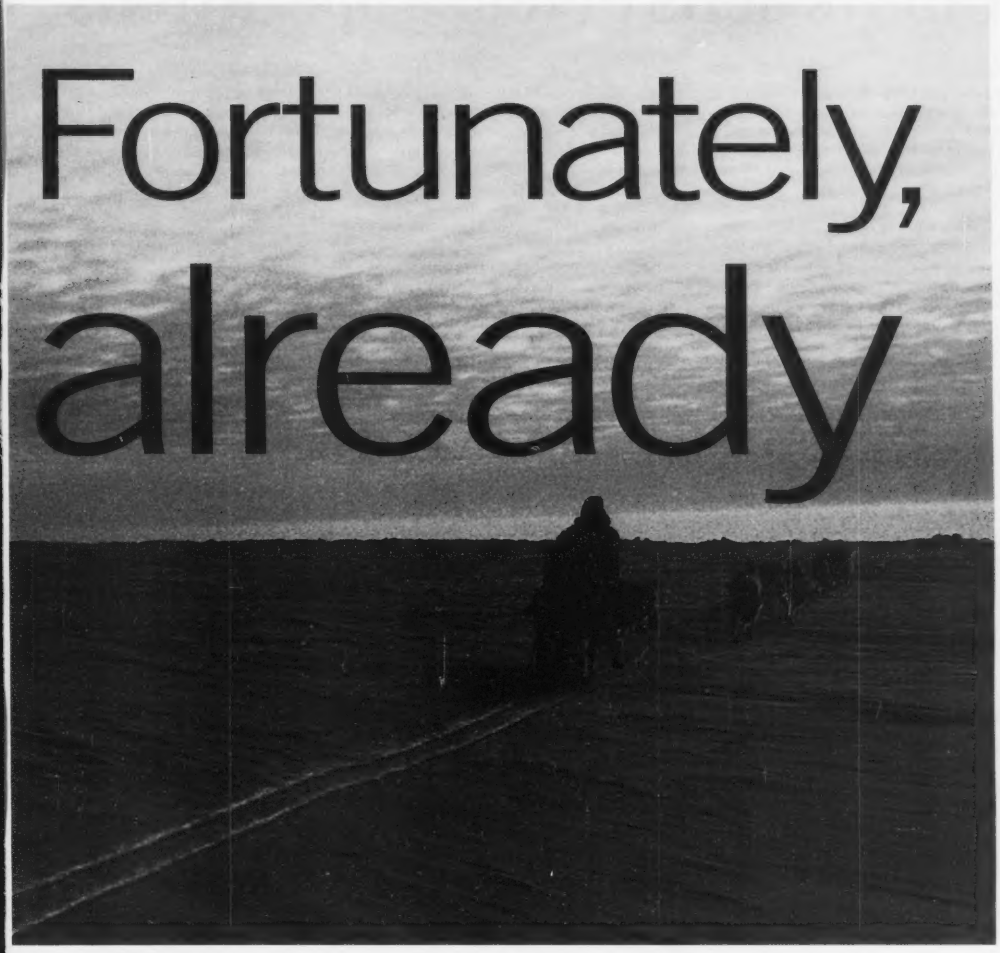
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Briefs

Merger almost final

Chicago-based **R. R. Donnelly & Sons Co.** is close to finalizing plans to merge its global software services unit with software services provider **Corporate Software, Inc.** in Norwood, Mass. Donnelly manages distribution and reproduction of digital and print media. The merger would create a $1.3 billion company.

3Com snaps up two

3Com Corp. has agreed to acquire **Primary Access Corp.**, a provider of integrated remote access systems, and **Sonix Communications Ltd.**, a leading UK internetworking firm. The transactions will cost 3Com $170 million and $70 million, respectively.

Cabletron results

Cabletron Systems, Inc. posted revenue of $226 million for its fourth quarter ended Feb. 28. It was a 34% increase over the $168.2 million posted for the same period last year. Profits rose to $45.5 million, compared with $33.5 million last year.

Seagate makes buy

Seagate Technology, Inc. will scoop up Unix network management software with the pending purchase of **NetLabs, Inc.** in Los Gatos, Calif.

Job growth reported

The U.S. electronics and information technology industry grew by 111,000 jobs last year, according to the **American Electronics Association**. Computer programming, prepackaged software and systems design showed double-digit job increases over 1993.

Oracle results up

Oracle Corp. reported last week that revenue and profit for its third quarter ended Feb. 28 increased 50% over the same period last year. Revenue rose to $722 million from $483 million in 1994; profits were at $105 million, up from $70 million for the third quarter last year.

Unisys sells defense operations

By Neal Weinberg

■Users last week seemed relieved that Unisys Corp. has finally thrown off the anchor of its sinking defense division and is focusing on the task at hand — shifting from mainframes to information services.

The Blue Bell, Pa., company sold its defense and aerospace operations for $862 million to Loral Corp., an acquisitive New York-based defense contractor that outbid Raytheon Co. and General Motors Corp.'s Hughes Aircraft Co.

"It's a good move" for Unisys, said Gene Lasseter, a database administrator at Tracor, Inc. in Austin, Texas, a defense electronics company with a Unisys mainframe. "It will give them some cash so they can focus on their computer business."

"They need to concentrate more on their core competency," said Venkat V. Raman, MIS director at LeFiell Manufacturing Co. in Santa Fe Springs, Calif. Eliminating the distraction of a dwindling defense business will let Unisys do just that, he said.

Cash boost

George F. Thomas, senior vice president and director of data processing at New York Clearing House, also agreed that the sale gives Unisys a much needed cash infusion. "Hopefully it will be used to eliminate some of the debt they have and put them on a stronger financial footing," he said.

While the still-profitable defense business accounted for 19% of the company's $7.4 billion in revenue last year, it was doomed to a slow decline by U.S. Department of Defense cutbacks.

With mainframe computers — a longtime Unisys mainstay — also facing a troubled future, Chairman and Chief Executive Officer James A. Unruh is trying to reposition the company as a provider of professional services, enterprisewide client/server products and software.

An example of the company's quandary was its latest quarter. Healthy increases in consulting services and client/server products were wiped out by declines in defense. The result was essentially flat revenue of $2.12 billion.

"The key to longevity in the computer business is focus, focus, focus," said Jim Johnson, chairman of The Standish Group International, Inc. in Dennis, Mass. "Divesting of an extraneous division that is not part of the core business [is] going to help them in the long run."

Brian Jeffrey, an analyst at International Technology Group in Los Altos, Calif., said Unisys is not losing strategic technology or synergies with other parts of the business.

And the money will allow Unisys to expand its product lines into areas such as parallel processing, he said.

Unruh last week described the sale as "the last major step in repositioning our existing portfolio of businesses."

Specifically, Unisys sold its military electronics systems integration, program management, software and custom product design and manufacturing businesses.

In addition, Unisys is selling some nondefense businesses — postal systems, weather systems and air traffic control — that were also part of the defense division.

This is not the first time Unruh has tried to unload the defense division. A 1991 effort failed to generate a high enough bid, and it was widely known that the unit was on the block again this year.

The deal is expected to close by Sept. 30.

Here's the deal

The bottom line for Unisys' sale of its defense and aerospace division to Loral Corp.

Sale price	$862M
1994 revenue of defense and aerospace division	$1.4B
Number of employees affected	8,500

Claris looks for Windows of success

By Lisa Picarille

Claris Corp. may be the software arm of Apple Computer, Inc., but that does not stop this wholly owned subsidiary from flexing its Windows muscles.

After years of providing Macintosh users with best-selling software in the drawing, database and word processing segments of the market, in 1992 Claris shipped its first Windows product, FileMaker 2.0. This year, the company is gearing up to launch three new Windows products.



CEO Dan Eilers *says Claris is gearing up to offer three new Windows products*

Of the company's $180 million in revenue, sales of Macintosh applications accounted for 80%. Windows applications made up the remaining 20%.

Claris is fighting an uphill battle because most of its offerings go head-to-head with Microsoft Corp., Lotus Development Corp. and WordPerfect. But the company is making headway. ClarisWorks, which owns more than 60% of the Macintosh integrated market, has shipped more than 3.5 million Windows copies since April 1993.

A Windows version of Claris Impact 2.0, the company's graphics program, is slated to ship in the next three months, and Claris Draw for Windows is expected at the end of the summer.

By the end of the year, Claris will ship a relational version of its popular FileMaker database product, said President and Chief Executive Officer Dan Eilers last week. The company plans to simultaneously release the Macintosh and Windows 95 versions of that product, an illustration of how important Windows has become.

Although Claris has embraced Windows, the company has no plans to support other PC operating systems. "We look for operating systems with the greatest volume potential," Eilers said. "We have limited resources, so we are not doing OS/2 for the PowerPC or Unix."

Leonard Brilliant, assistant vice president of the retail service division of Shawmut Bank NA in Boston, is a typical Claris customer. He uses FileMaker to track equipment in the bank's many branch offices, and he chose the product because it runs on both Macintosh and Windows.

Chris LaTocq, president of SoftTracks, a software research firm in Los Altos, Calif., said, "The real challenge is to find businesses that [Claris] can sell FileMaker to on its own merits" rather than as a Macintosh compatibility purchase decision.

"They have to expect to get to a point where revenue is 50-50. If they don't get 50% or more from sales of Windows [products] they can't succeed," LaTocq said.

Others agreed.

"To be a successful software vendor in the 1990s, a developer has to be successful on all relevant platforms and ... Windows is more relevant than the Mac," said Peter Rogers, an analyst at Bear Stearns & Co., an investment firm in San Francisco.

On the Macintosh side, Claris anticipates growth due to Macintosh clones that will be out this year.

Switchback

Claris was formed in 1987 as an Apple subsidiary. Originally, Apple intended to spin it off as a public company. However, in July 1990, Apple changed its mind and repurchased Claris stock from its employees, making the company a wholly owned subsidiary.

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(c) OS/2 (g) Windows
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70. Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
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(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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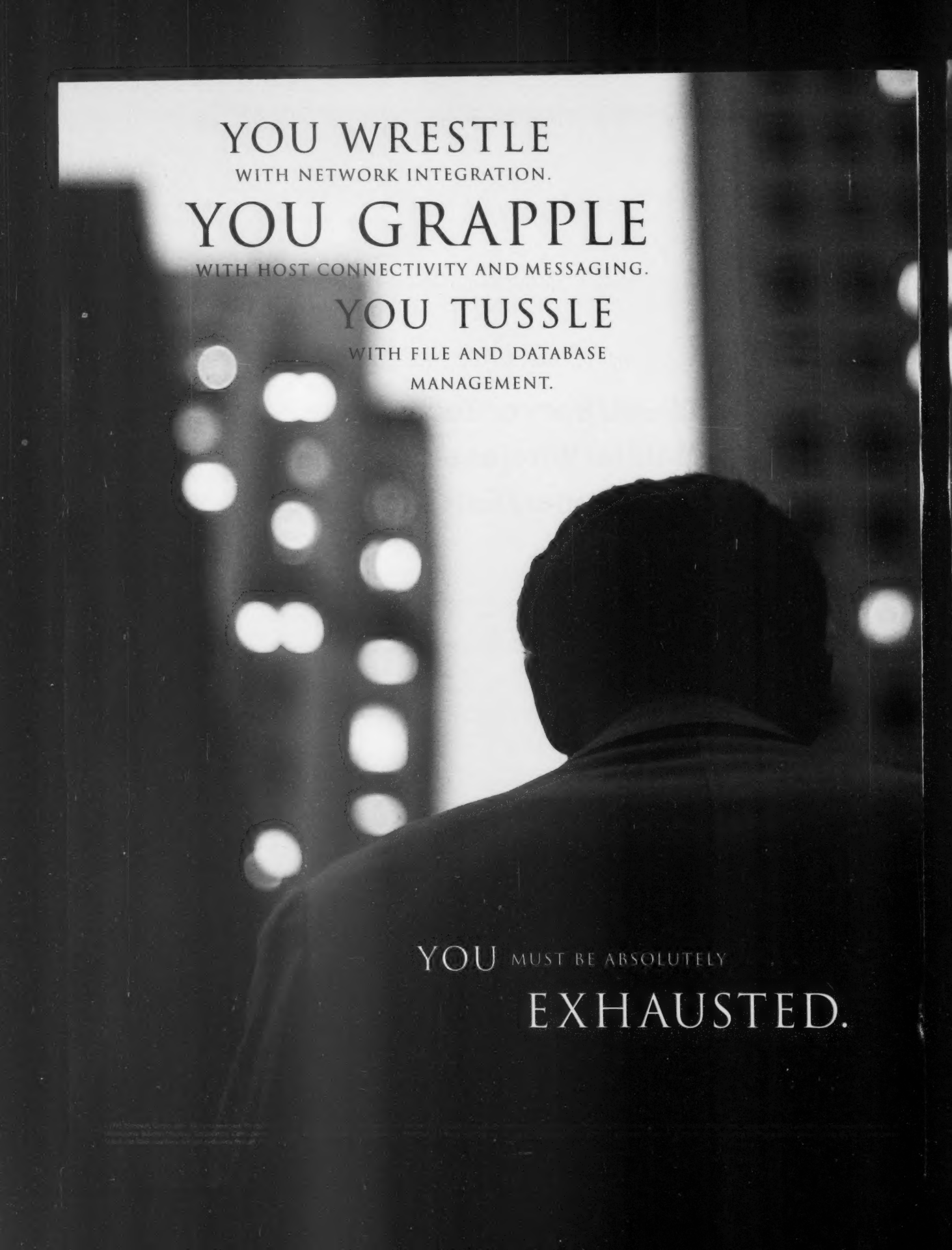
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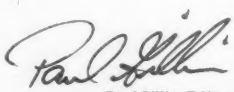
Waiting for Windows

Twenty-five things you could be doing while you wait for Microsoft's Windows 95 to ship:

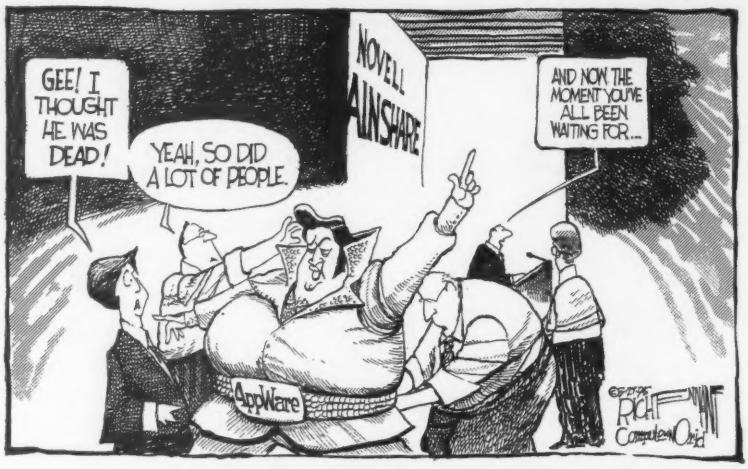
1. Knitting an afghan. A really *big* afghan. Like the size of Des Moines.
2. Taking a walk. To Cleveland and back.
3. Running a trademark search to see if anyone has the rights to "Windows 96."
4. Calculating the time it would take to test Windows 95 on every combination of 100 brands of PCs, 25 brands of video cards, 50 brands of network cards, 10 brands of sound boards, five varieties of keyboards and eight languages. Assuming that's a conservative estimate of what Microsoft is up against.
5. Reading Homer's *Iliad*. After first learning ancient Greek.
6. Drawing a map of the information superhighway.
7. Rereading *The Mythical Man-Month* to understand why it's taking Microsoft so long.
8. Reading *Gates* by Manes and Andrews for a good explanation of why Microsoft doesn't really care.



9. Downloading a photo of the first family from http://www.whitehouse.gov. Soon to be a collector's item.
10. Coming up with 50 uses for a 1,200 bit/sec. modem.
11. Surfing the World-Wide Web with that same modem.
12. Calculating how much money Bill Gates will have by the time he retires in 2020 if he puts $7 billion into CDs at 7% interest.
13. Tracking down copies of all 714 articles in *The New York Times*, *The Wall Street Journal*, *Business Week*, *Forbes* and *Fortune 1994* in which the word "Internet" appeared.
14. Calculating the financial impact of a 400,000-user Windows 95 beta test on the floppy disk industry.
15. Translating *The Gulag Archipelago* from Russian into C++.
16. Translating the Common Desktop Environment marketing strategy from English into something that makes sense.
17. Trying to find out what Ken Olsen is up to these days.
18. Reforming national health care.
19. Installing IBM's PC DOS 7.0, the best PC operating system value since IBM briefly gave away OS/2 for $30.
20. Seeing how many computer magazines you can get for free by lying on the subscription card.
21. Trying to find the hidden contest in 7th Level, Inc.'s devilishly clever *Monty Python's Complete Waste of Time* CD-ROM.
22. Thinking of a line that rhymes with "Please look after my quetzlcoatl."
23. Trying to explain symmetrical multiprocessing to your mother.
24. Waiting for your replacement Pentium chip to arrive.
25. Waiting for an answer to an E-mail sent to billg@microsoft.com.



Paul Gillin, *Editor*
Internet: *pgillin@cw.com*



R:Base fan

Regarding "Microrim arrives late to Windows party" [CW, Feb. 13], I do not support the negative comments made about R:Base 5.0 for Windows.

I am enthusiastic about R:Base 5.0 for Windows and all it brings to the R:Base and Windows application development communities. R:Base is really the first heavy-duty database management system for Windows that offers full referential integrity as well as impressive speed.

I have a long history of positive experiences with R:Base, and I expect that tradition to continue with R:Base 5.0 for Windows.

Scott J. Salisbury
Matrix Data Systems
Seattle

OS/2 apps are out there if you look

I am shocked by the story "New apps for OS/2 remain hard to find" [CW, Feb. 13]. First of all, this letter was written using DeScribe 5.0, from a native OS/2 pioneer, which is arguably as fine a word processor as is available today for any platform.

The spreadsheet Mesa 2.1 from Athena Design in Boston has recently arrived as well as the unique word processor Clearlook from Clearlook Corp. in Burke, Va., with the latter planning database communication modules. These two offerings are quality products and are only for OS/2.

Had your article said that the lack of offerings were from large, respected and well-known companies but that smaller companies were filling the gap, it might have made a point.

The main culprit for the lack of large software companies supporting OS/2 is OS/2's parent. When IBM gets its act together and stops preloading its competitor's product and commits to OS/2 by preinstalling this fine operating system on all its PCs, the message will ring loud and clear that OS/2 is here to stay.

Allen George Dartt
Dartt Computer Consulting
East Norwich, N.Y.

Need for IS security is nothing new

Your editorial "Hackerama" [CW, March 6], makes it sound as if information systems security is a new topic.

Here in California, we have a law that allows confiscation of the computer used by a cracker when charged with a computer crime. In family situations, it's generally the parents' machine. Also, someone who is convicted of a computer crime is restricted from holding employment in the computer field, afterward.

While the above is useful in getting someone's attention, the true issues are ethical behavior, responsibility for one's actions and the desire to be a positive force in society.

Edwin B. Heinlein
San Francisco

IBM's OS/2 (non)strategy

It is clear today that no matter what IBM does, OS/2 won't make it. They just don't seem to understand that the world does not need another PC operating system, no matter how good it is.

There is no doubt that OS/2 is one of the best. However, I think IBM would do better to put their full weight behind AIX and build a robust set of support tools and graphical user interfaces for it, rather than continue to sink money into the black hole called OS/2.

If they could use their resources to build the fastest growing server operating system in the market, they could capture a large percentage of that market. If IBM threw its full weight behind AIX, business users and independent software vendors would flock to it in droves. You have to wonder if Microsoft isn't making the same mistake with Windows NT and Windows 95.

Joe Torch
Snellville, Ga.

BEST COMPUTER NEWSPAPER 1992, 1993
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Patience still a virtue

Judith S. Hurwitz

During the past 10 years, I have watched as new, innovative software was introduced with fanfare and excitement. Breakthrough products such as Windows, OS/2, the Open Software Foundation's DCE, Taligent, IBM's Systems Application Architecture, NextStep and Notes have much in common from a deployment perspective.

Each of these technologies seemed destined to change the face of computing. In all cases, either the technology took five years longer than expected to become commercially viable, or it sunk under the weight and complexity of the undertaking. Why did this happen? In essence, the industry has been undergoing massive transformations, and the software keeps growing in complexity.

In the computer industry, both users and vendors are an optimistic lot. We look at the speed of technology change and assume it happens overnight. We expect software to be on the same fast track as hardware, which turns over every 12 to 18 months. In actuality, innovative software typically follows a predictable cycle.

First, a product is announced with great excitement and anticipation, promising to be the solution to all computing problems. Next, the product moves into beta and ships into the real world with unanticipated imperfections. Finally, after about five years, this once "perfect" invention becomes stable enough to bet your business on.

Look at all of the new technologies that have promised perfection in the past decade: SAA, OfficeVision, AppWare Foundation, Microsoft at Work, to name but a few. All pledged to revolutionize the way software helped to solve business problems, but they failed when product developers were unable to meet user requirements.



We look at the speed of technology change and assume it happens overnight.

Software intended to solve complex problems is itself complex. We make the task still tougher by expecting software to hide its complexity from the developer and end user. Therefore, developers must anticipate the ideal way for software to interact with hardware, other software components and even users. In addition, new software usually has to accommodate some level of legacy code or business rules. Users are rarely able to move lock, stock and barrel from what they used for decades to something new.

Unlike hardware, which can start with a clean slate, software must be integrated with complex systems in unanticipated ways. Even the software that has been with us for decades is rife with bugs and problems. The difference is that we have gotten to know its warts so well that we know how to work around them and avoid pitfalls.

Of course, not all promised innovations fail. Products like Windows and OS/2 eventually stabilized enough to be trusted. But organizations want to believe that these products will be correct at the outset.

How should you respond to pronouncements and preannouncements of new technology? First, test the software so that you understand its promise. Second, keep in mind that you will not be able to roll out this new innovation in just weeks or months without taking substantial risk. Finally, plan on a multiyear rollout of new innovative technology. Follow these steps and you'll be prepared but not disappointed.

Hurwitz is chief executive officer of Hurwitz Consulting Group, Inc., a software consulting, research and publishing firm in Watertown, Mass. She can be reached at jhurwitz@world.std.com.

Nothing in common here

John Gantz

Remember the original reason for GUIs such as Windows? It was to develop applications with a common look and feel. No longer would we need to chew up programmer time writing interfaces for each application or monkey with the interface every time an application was modified. No longer would we users hit the delete key because that was the escape key on another app.

All of our applications could now use the same buttons, menu bars and icons. One interface could support lots of applications. The gazillions we would save in programmer effort and end-user productivity could help pay for the Cray supercomputers we needed to install on our desktops to run these GUIs.



Like a government program gone awry, the plan to simplify the user interface is leading, instead, to more complexity.

Well, like a government program gone awry, the plan to simplify the user interface is leading, instead, to more complexity. The interfaces themselves have interfaces.

What made me think about all this was Microsoft Bob, that much-maligned first attempt by Microsoft to plant yet another layer of software with the Microsoft logo on it between users and their (Ugh!) hardware. Blackballed by the PC cognescenti — most of whom like to write device drivers in machine language just for fun — for being too simplistic, MS Bob is still a major development. It is simultaneously a throwback to the time when each application had its own interface and an embodiment of a new one-user, one-interface concept.

Bob made me realize that the common look and feel idea of the user interface has degenerated. Contributing to its demise has been the introduction of office suites — now *this* is where we find our common look and feel, I guess — and other software bundles.

In addition, there are PC shells marketed by a half dozen or more PC vendors, new interfaces from the on-line service vendors and things like OS/2 for Windows, where the GUI is separate from the operating system.

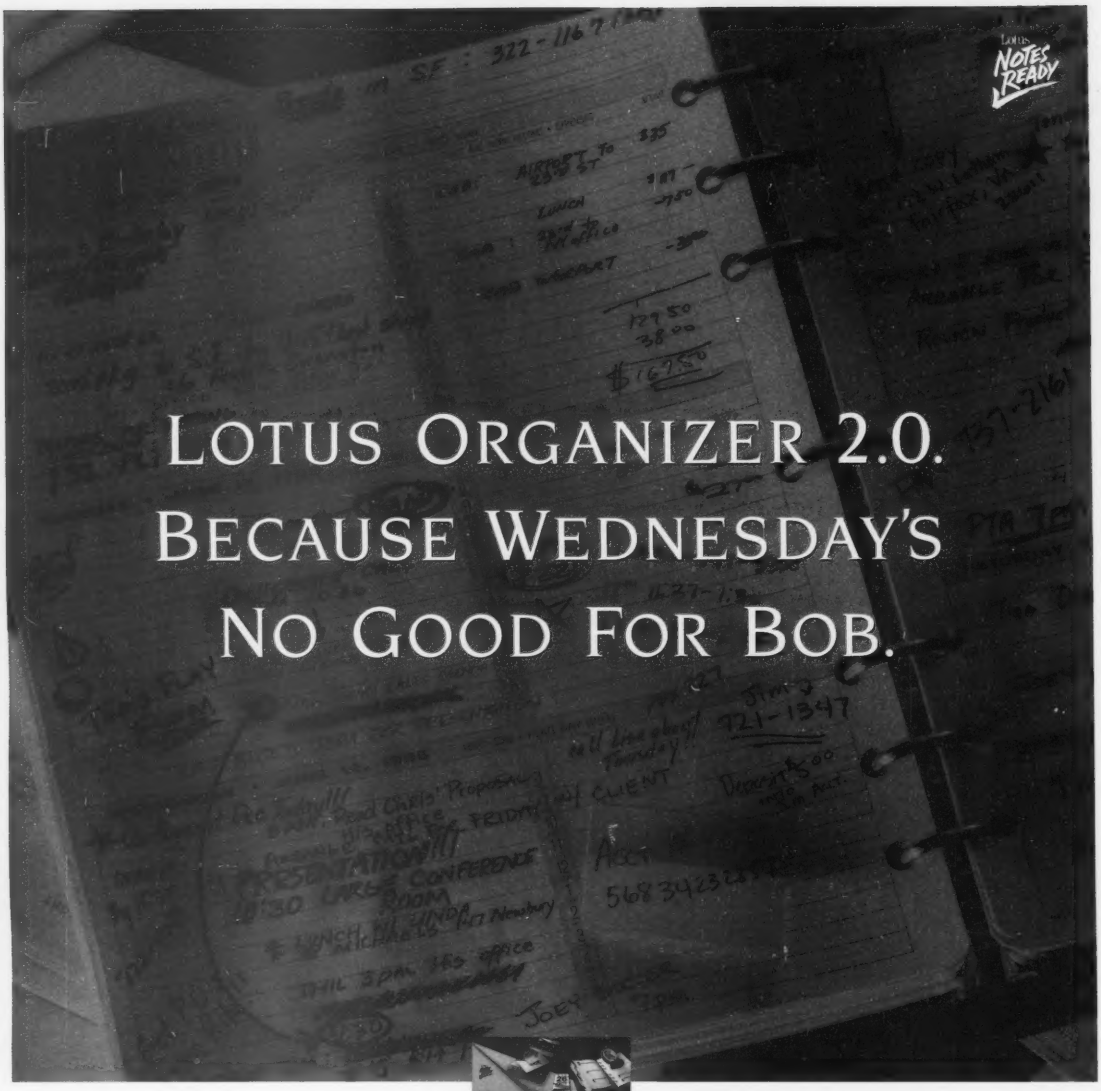
Mind you, I love the idea of a customizable user interface — particularly if it supports OLE or OpenDoc and I can cut and paste with other applications. However, I doubt that means I'll get away with having just one GUI on my system — more than likely I'll need half a dozen or more.

Here's the rub. That means I'll need more hardware to run all these interfaces, training and support on a half dozen more pieces of complex software, debugging support when incompatibilities arise, more help installing new systems and, last but not least, time wasted in evaluation and increased risk of picking an inadequate interface. Wait until your organization is running a zillion user interfaces, each built from kits by inexperienced users. Won't that be fun to support.

You won't be able to fight the tide, so I suggest you co-opt it. Those shells now being sold by PC manufacturers in the consumer market may well be a prototype for MIS-delivered shells and user workbenches that provide custom or quasi-custom interfaces for diverse user sets.

Do it right and think of all the programming time and end-user training you can save . . . uh, er, at least until the next iteration.

Gantz is a senior vice president at International Data Corp. in Framingham, Mass.



There's some kind of cosmic waffle rule that applies to business meetings: if you reschedule once, you will have to reschedule a dozen times. Because if it isn't Bob, it's Joan, or Gayle or Jorgé. And meanwhile, the perceived importance of any meeting is inversely proportional to the number of times it is pushed back. It's been proved.

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Unix CDE debuts with revised role

By Jean S. Bozman
DALLAS

■ It took two years to develop. And its original mission of staving off Windows in Unix shops is gone. But the Unix industry's Common Desktop Environment (CDE), which debuted at UniForum '95 here, has been cast in the role of a unified desktop that will reduce user training in multivendor shops and ease independent software vendor software ports.

Executives from CDE's four original sponsors, IBM, Hewlett-Packard Co., SunSoft, Inc. and Novell, Inc. — along with later sponsor Digital Equipment Corp. — stood by like proud parents while the unified user interface was shown on several different Unix hardware systems.

Longtime Unix users said they are pleased with CDE. "It's a unified, de facto standard because all the vendors support it," said Doug Eltoft, director of operations at the University of Iowa's College of Engineering in Iowa City.

But CDE's greatest impact may be on Unix applications that users want to act consistently on multiple hardware systems, Eltoft said. "I want to be able to say to software vendors, 'Sell me this product on this platform and have it look and run the same way on each of them.' " That would include relational database applications, he said.

Industry analysts said CDE should reduce software vendors' development and support costs. "Where there is concern about porting to, or administering, multiple platfroms, CDE takes an additional element of risk and support costs out of the equation," said Tom Willmott, vice president of Aberdeen Group in Boston.

CDE, *page 40*

Scheduling finds suite spot

Microsoft adds emerging staple application to Win95 package

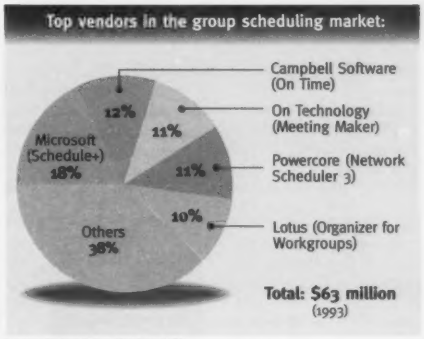
By William Brandel

Partly in preparation for its whirlwind Windows 95 marketing ramp-up, Microsoft Corp. announced that Schedule +, a group scheduling program, will be the fifth application in its Office for Windows 95 suite.

Microsoft's main reason for including Schedule+ in the application suite is that group scheduling, much like word processing and spreadsheets, is becoming a staple application for most users.

While group scheduling is new for Microsoft's suite, such applications are already included in other suites on the market. Lotus Development Corp. packages its Organizer PIM in SmartSuite, while WordPerfect, the Novell, Inc. Applications Group, has integrated group scheduling into its GroupWise client in its PerfectOffice suite.

The result is that group scheduling will become pervasive at corporate sites in 1994 and 1995, according to Kari Wong, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif. In fact, the group scheduling market is expected to grow at a compounded annual rate of 39% from 1994 to 1998, according to Dataquest. The market was measured at $63 million at the end of 1993.



Source: Dataquest, Inc., San Jose, Calif.

Hot pursuit

Dataquest notes that only 54% of users have a group scheduling solution at their site, but 93% have electronic-mail systems. With scheduling often based on E-mail systems, this gap is expected to close rapidly in the next two years.

Electronic group scheduling is not new to organizations, said Darby Johnson, an analyst at International Data Corp. in Framingham, Mass. In fact, it was a very popular feature in IBM's Professional Office System (Profs), a mail system for mainframe environments. But as companies have moved their E-mail systems onto LAN systems, group scheduling has become an add-on application rather than a staple at user sites. Users are now rediscovering group scheduling in the PC LAN arena.

"We are far more efficient now with calendaring and scheduling on-line," said Darryl Proudfoot, treasurer at Poco Petroleums Ltd. in Calgary, Alberta. "It saves the time you spend having to track down individuals in your organization."

Group scheduling is a mission-critical function for the Ohio Department of Human Services, said John Hurd, deputy director of human services. The department uses Novell's GroupWise to consolidate information from 140 different offices throughout the state as part of a federally mandated reform of the child-support system, Hurd said.

The move toward electronic group scheduling is ex-

Scheduling, *page 40*

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Nokia Multigraph 447X

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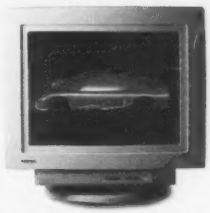
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NOKIA MONITORS

Software combo cuts delivery guesswork

Mapping, logistics package adds precision to home deliveries; customers receive two-hour window

By Mitch Betts



You know the drill: Stay home from work all day to wait for furniture delivery or the appliance repair truck.

"It's a major consumer complaint. And what's worse, sometimes they never show up," said John Tschohl, president of the Service Quality Institute in Minneapolis.

But some service companies are using a combination of desktop mapping software and sophisticated logistics algorithms to give customers a more precise idea of when deliveries will be made.

The scheduling software narrows the estimated time of arrival so that customers receive a two-hour window rather than a promise of delivery "sometime during the day."

"We can't get closer [than two hours] because you never know when you'll run into a truck inspection station or a spiral staircase in the home," said Bill Mooradian, operations manager at Mooradian's Furniture, Inc. in Troy, N.Y.

Mooradian said customers are "pleasantly surprised" by the capability. "We meet the promised schedule 96% of the time. The record would look even better except for the massive snowstorms we get," he said.

Weighing variables

The software, which runs under Windows, is provided by Avon, Conn.-based RoTec, a routing and logistics software subsidiary of Comdata Network, Inc. The software is full of optimization algorithms that take into account dozens of variables to produce the most efficient delivery route.

> "We can't get closer [than two hours] because you never know when you'll run into a truck inspection station or a spiral staircase in the home."
> — Bill Mooradian, Mooradian's Furniture, Troy, N.Y.

The intelligent maps show the location of each customer and calculate the travel time based on the actual road network rather than as the crow flies. If the trucks are outfitted with mobile computers and satellite positioning devices, the maps can show the exact location of the truck and spot problems.

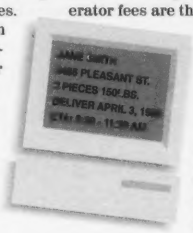
The RoTec software, which costs $50,000 to $100,000 depending on options, gets its mapping capabilities from MapInfo Corp. in Troy. It typically runs on speedy high-end PCs but can also be embedded in midrange or mainframe systems, the vendor said.

Because of the many variables, the routing and scheduling calculations take an hour or more and are done the day before the deliveries. The whole process is done in two hours now, Mooradian said, as opposed to six or seven hours when done manually.

Furthermore, the PC can recompute the route in order to accommodate last-minute changes if a customer needs to revise the schedule, he said.

For the delivery companies, the big benefit is more efficient routes. "We've seen an 18% increase in productivity because the computer packs more stops into a shorter period of time," said Robert Worthington, terminal manager at TransFreight Systems, Inc. in Philadelphia.

The marriage of geographic information systems and optimization algorithms can turn an ordinary information system into a far more powerful system, said independent consultant Donald B. Brout, president of Quality Technology Decisions, Inc. in New York.



Custom option

RoTec and MapInfo recently completed a highly customized version of the system for Houston-based Browning-Ferris Industries, Inc. (BFI), the garbage hauling conglomerate. Customer information is automatically extracted from an IBM 3090 mainframe and distributed to 75 dispatching offices that have the mapping and routing software.

Local systems then proceed to build the most efficient routes possible for commercial and residential waste pickup, taking into account variables such as the times of day when landfill and incinerator fees are the cheapest, said David Turgeon, divisional vice president for operations analysis at BFI.

"We've got a big head start" over competitors that are planning similar systems, Turgeon said, adding that it sure beats push-pins on paper maps.

Microsoft fixes Word for Mac

By Lisa Picarille

Attempting to address the complaints of Macintosh users, Microsoft Corp. last week shipped a maintenance release of its best-selling word processing software. The company says the release improves speed and resolves conflicts with a handful of system extensions.

Microsoft officials said Word 6.0.1 for Macintosh is 10% to 50% faster than the previous version when loading, depending on the hardware configuration for the Apple Computer, Inc. system. The update was also designed to resolve system extension conflicts, thus improving the performance of many font packages, including Adobe Systems, Inc.'s Adobe Type Manager and Adobe Type Reunion.

Bonus features

The latest release also improves the word count function, displays words faster as they are typed, resolves problems in printing envelopes and includes a command to revert keystrokes to those used in Word 5.1, Microsoft said.

The incremental update is free to registered users of Word 6.0 and will be included in an updated version of Microsoft Office, Version 4.2.1, due later this month. Users can order the updates from Microsoft at (800) 315-5081.

Unix CDE

CONTINUED FROM PAGE 39

CDE's leading features are a consistent Open Software Foundation Motif-based graphical user interface that avoids the use of Unix command lines and a set of icon-based desktop tools for multimedia electronic mail, calendaring, terminal emulation and windows management. All CDE sponsors contributed technology, but HP's Visual User Environment desktop and SunSoft's E-mail, calendar and ToolTalk interapplication messaging software are most visible in the final CDE product.

But for some commercial sites that combine Windows-based PCs with Unix servers, CDE is a nonissue. "CDE is good for those who use X terminals and Unix workstations," said one information systems manager at an automaker in Detroit who requested anonymity. "We're using all Windows desktops, with a lot of Unix servers," he said. "I won't care about it unless it's implemented on top of Windows."

TriTeal Corp., which helped the major Unix vendors complete interoperability testing for CDE, plans to forge links between CDE and Windows in future releases of its TriTeal Enterprise Desktop (TED), a form of CDE.

TriTeal Marketing Vice President Rand Schulman said his firm had a UniForum demonstration of a Solaris 2.x CDE desktop. It displayed Windows NT 3.5 application "window" by using Tektronix, Inc.'s WinDD product.

Initial CDE deliveries will be ports of the CDE 1.0 code from TriTeal, which is based in Carlsbad, Calif. Those shipments will support IBM's AIX 3.2.5, HP's HP-UX 9.x and SunSoft's Solaris 2.3, among others. TED is being ported to 12 Unix platforms and costs $425 as a standalone option. The major Unix vendors, including IBM, HP, SunSoft, Novell and Digital, said they will bundle CDE code for free into their next operating system releases.

Left out

The Santa Cruz Operation, an original backer of unified Unix in 1993, was noticeably absent from CDE's debut at UniForum '95. "We've never been part of CDE," said Doug Michels, executive vice president of SCO, shortly after the CDE event. "We think the interesting market is Unix servers that talk to Windows clients, and CDE has no bearing on that market."

Scheduling

CONTINUED FROM PAGE 39

pected to create a fight for market domination between suite vendors and vendors of LAN-based group scheduling solutions, according to Dataquest. No company dominates the market, but Microsoft holds the most market share in the group scheduling market with 18% (see chart, page 39).

Schedule + is followed by products from lesser-known vendors, such as Campbell Software's On Time, On Technology's Meeting Maker and Powercore, Inc.'s Network Scheduler 3, as well as Lotus' Organizer for Workgroups, which has only a 10% share.

Added extra

However, by shipping a scheduling client alone with a desktop suite, user sites do not automatically gain group scheduling capability. The applications must be based on a LAN or on an E-mail system for sites to be able to share and reconcile the individual schedules.

And sites are required to pay for this capability. For example, a GroupWise site still must pay $2,995 for a Novell NetWare Loadable Module for its application.

With the scheduler integrated into the same menu and command structure in a suite, users will have fewer training issues to deal with and will require fewer system resources on the desktop. As a result, these suite-based solutions are expected to become more popular with users and gain market share in the near future.

"We first saw our calendaring system as part of SmartSuite," Proudfoot said. "We're trying to standardize, and this meant one less application for our users to learn."

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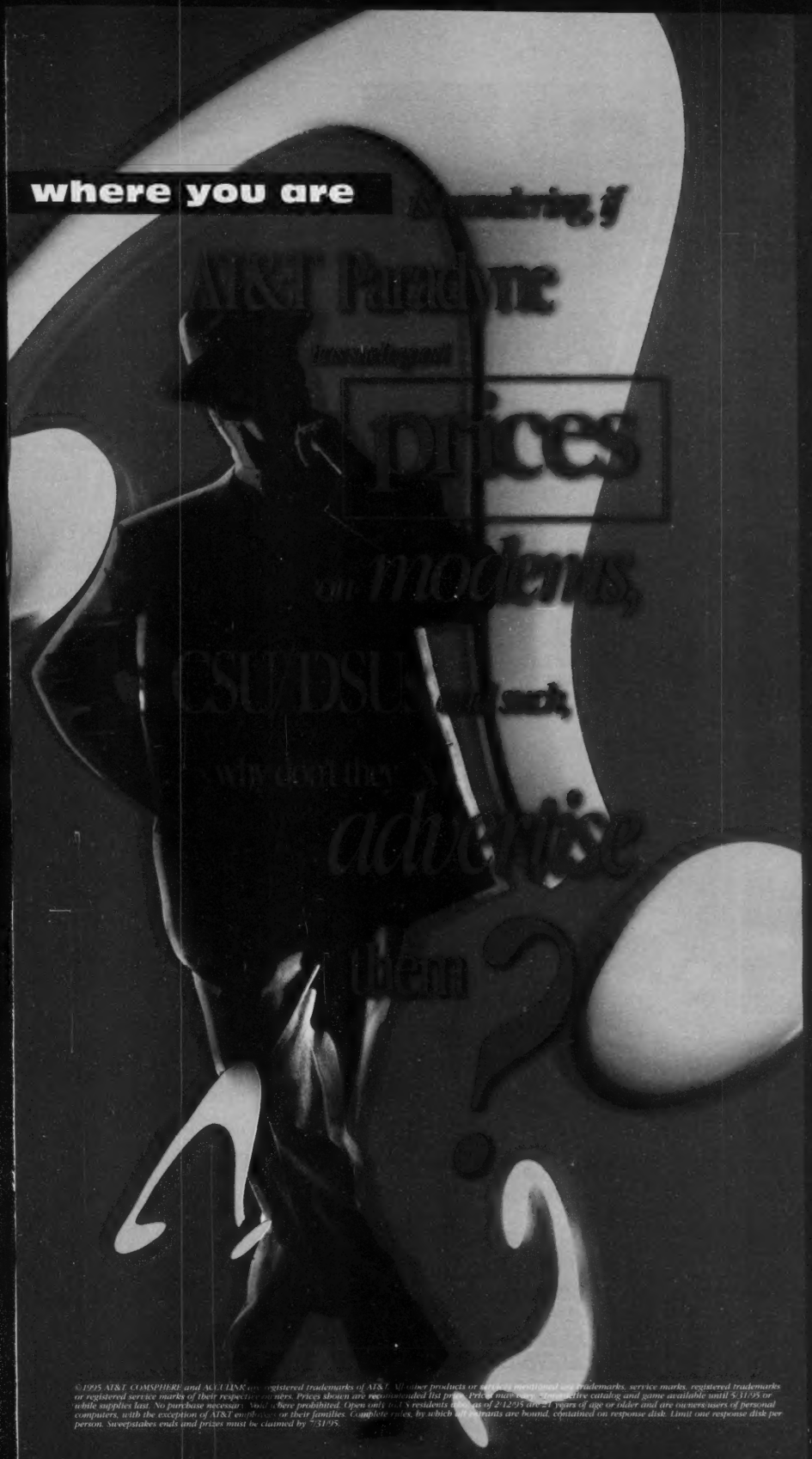
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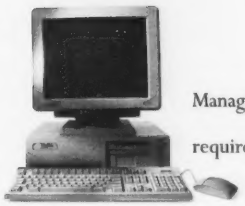
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Introducing the new Compaq Deskpro

Managing computers on a network requires knowledge, skill and a bit of intuition. Okay, a lot of intuition. Somehow, you have to know what's going to happen. Before it actually happens.

Wouldn't it be great if you had a little help? A crystal ball? A sixth sense, perhaps?

Funny, we were thinking the same thing. So we built the new Compaq Deskpro.* A computer that can report its status right to the desk of the network administrator.

HAVE COMPUTERS BECOME MORE HUMAN? WELL, THIS ONE CAN TELL YOU WHO IT IS, WHAT IT'S DOING, AND HOW IT FEELS.

Imagine being warned before a hard drive on another floor (or another city) seized up. Or taking a complete PC inventory right from your desk. (Certainly not the kind of cooperation you'd expect from a machine.)

We call it Intelligent Manageability. You'll probably call it "I'm glad someone finally thought of that."

How do we know? Maybe it had something to do with intuition.

COMPAQ

COMPUTERS THAT TAKE CARE OF THEMSELV

Research proves what you've known all along: only 20% of the lifetime cost of your company's PCs is the initial cost.* The other 80% comes from all the things you do to manage them—such as configuring, servicing, upgrading and just keeping track of who's got what. Isn't it time someone found a way to change that?

Asset Management 101. The new Compaq Deskpro is the first PC that's as concerned about cutting costs as you are. It starts with the Intelligent Manageability we mentioned a page ago: a Compaq-designed combination of hardware and software that gives you a new level of control over your networked PCs.

Until now, the only way to take stock of your PC assets was to physically visit each of your computers. At every stop, you'd have to examine the computer, take serial numbers, check software, open it up and take a look inside. A process that could literally take days.

With the new Deskpro, all of that changes. Working closely with the leading LAN management companies, we built in features that can easily be tapped by their new software tools.

And the result is stunning: Now, as network manager, you can look into a Deskpro PC anywhere on the network and get the facts you need. You can retrieve hardware specifications, including make, model and serial number for the PC, hard drive and monitor, and revision numbers for the system board and ROM. You can also identify system software and drivers.

It's not only good knowledge to have. It makes the process of maintaining and updating PCs vastly more simple.

Fire prevention. When people decide to stop working for you, they usually have the courtesy to give notice. PCs, however, seem to enjoy the element of surprise.

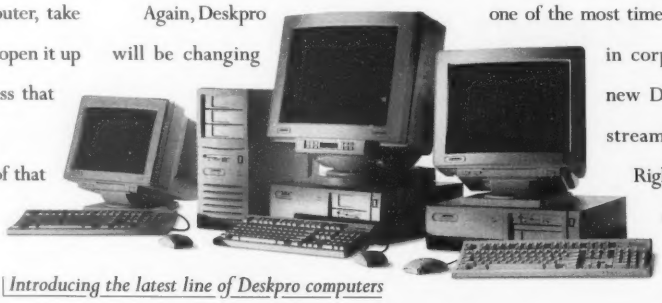
Again, Deskpro will be changing things. With Intelligent Manageability, it alerts the user to key potential problems before they can turn into real ones.

Every time you power up the Deskpro, its IntelliSafe™ hard drive takes a very close look at itself. If any of its performance parameters has fallen below acceptable standards, the user is notified. So instead of responding to a disruptive emergency, you have ample time to take corrective action—replacing the drive at no cost under the Compaq Pre-Failure Warranty.™

In addition, our Environmental Fault Protection is constantly monitoring the internal temperature of your Deskpro to make sure it isn't working under conditions which might imperil your valuable data.

Networking is in our blood. Since setting up a PC on a network has turned into one of the most time-consuming pastimes in corporate America, the new Deskpro was built to streamline the process.

Right out of the box, it's configured for your



Introducing the latest line of Deskpro computers

* Source: Gartner Group

COMPAQ

network, with a 32-bit PCI Ethernet NIC or an IBM Token Ring adapter already installed. The drivers are optimized and industry-standard connectors are in place.

With its simple configuration tools, Deskpro also reduces the frustrations of setting up desktop network software.

Under the hood. What makes Intelligent Manageability so appealing, of course, is the fact that it's built into an enormously powerful and efficient computer.

speed of our new QuadSpeed CD-ROM and CD-quality digital sound enabled by built-in Enhanced Business Audio.

Open and accessible. Needs change, goals change and people change. Fortunately, so can a Deskpro computer.

You can open it up without any special tools. The system board slides out, making it a simple matter to upgrade the processor or add extra memory. The PCI expansion slots are easily accessed. And the drive

they can actually consume less power.

(The savings in a month from one Deskpro probably won't finance your retirement villa, but the savings from many machines over many years should have a nice effect.)

And when Windows 95 is released, Deskpro will make the job of managing your company's PCs even easier. Using new management software tools provided by Compaq and our industry partners,

ES? THIS COULD TAKE SOME EXPLANATION.

With Deskpro, you can choose your processor, from a DX2/50MHz to the most powerful Pentium. And every model delivers the enhanced performance made possible by Compaq's new TriFlex™/PCI architecture. In fact, in our latest crop of Deskpro computers, higher performance is something you can literally see and hear.

Thanks to PCI local bus graphics, you get crisp, responsive graphics even in everyday applications. (Select 586-class Deskpro models are available with higher-performance VRAM graphics.)

In multimedia models, you get the cage swings out to make hard drive upgrades painless.

Plus, the Deskpro system board utilizes Flash ROM technology, allowing you to make future upgrades at the basic board level simply by running a software utility.

With the process of upgrading PCs reduced to mere minutes, you can spend your time on more lucrative pursuits.

Future dividends. And then there are the benefits you'll be reaping down the road.

Since all Deskpro models are designed with built-in power management features that meet stringent EPA requirements,

you'll be able to monitor the health of all your networked Deskpro PCs—including the ones in your outpost six time zones away—without ever leaving your desk.

You'll be able to configure Deskpro so if IntelliSafe hard drive failure becomes a possibility, it will send a distress call across the network. Or automatically safeguard its data on a tape backup. You'll even be able to arrange for remote notification of potential problems with network interface cards or internal PC temperatures.

But then, what do you expect from a computer that takes care of itself?

As with all Compaq PCs, Deskpro is covered by our free 3-year limited warranty. For more information on our full line of Compaq desktop PCs, call us at 1-800-345-1518 or reach us on the Web at www.compaq.com. In Canada, we can be reached at 1-800-567-1616. ©1995 Compaq Computer Corporation. All rights reserved. Compaq and Deskpro registered U.S. Patent and Trademark Office. IntelliSafe and TriFlex are trademarks and Compaq Pre-Failure Warranty is a service mark of Compaq Computer Corporation. Some features available with Compaq Deskpro and independent software applications. Other features only available with Windows 95. Pentium is a registered trademark of Intel Corporation.

Toshiba LCD offers big color

By Rob Guth
TOKYO

Subnotebooks may never offer all the full-size features of notebooks, but a Toshiba Corp. thin film transistor (TFT) LCD will let them house a color screen usually found only in their larger siblings.

The 9½-in. display offers a smaller outer frame (9¼ by 6½ by 0.35 inches) than similar units from leading screen makers such as NEC Corp. and Hitachi Data Systems Corp.

About the size of a standard 8.4-in. screen, the Toshiba display weighs about a pound, consumes 2.5W and was designed for use in subnotebooks, a Toshiba spokesman said. It has a 640- by 480-pixel resolution and can display 260,000 colors.

Toshiba is shipping samples now at a price of $1,667. Mass production will begin in May at a level of 20,000 screens per month.

Observers at rival companies were impressed by the Toshiba screen. They noted, however, that Japanese screen vendors, who supply nearly all of the world's TFT LCD screens, are focused on the richer rewards of 10.4-in. screens for notebooks.

"Recently, large screen sizes are being requested for usual PC applications, so we are now focusing on [10.4-in.] format. But in the near future, we will develop a similar, small-size 9.4-in. display," said Hidehiko Katoh, chief manager of technology in the color LCD division at NEC.

Toshiba achieved most of the size savings by mounting the unit's 16-bit driver integrated circuits on the underside of the frame instead of in the conventional position, which is on the same plane as the display face.

Guth is a correspondent at IDG News Service's Tokyo bureau.

Tektronix, Inc. has announced the Phaser 340, a 4 page/min. desktop color printer.

According to the Wilsonville, Ore., company, the Phaser 340 prints color output on regular office papers and prints saturated colors on transparency film.

The printer lets users match colors on a computer screen, simulate the colors of a commercial press or boost the brightness of colors for overhead presentations. The standard 8M bytes of RAM can be expanded to 24M bytes for faster image processing and pipeline processing of pages.

The Phaser 340 costs $4,995.

▶ *Tektronix*
(503) 682-7377

Toshiba America Information Systems, Inc. has announced XM-1102N, an internal CD-ROM drive for notebook computers.

According to the Irvine, Calif., company, XM-1102N is a double-speed drive with a drawer-type disk-loading system.

The drive's variable-speed playback technology reads data before the disk rotational speed reaches one or two times the standard rotational speed. An AT Attachment Packet Interface eliminates the need for additional interface boards.

XM-1102N costs $150.

▶ *Toshiba America Information Systems*
(714) 457-0777

VideoLogic, Inc. has announced the GrafixStar family of 64-bit video-enabled graphics cards.

According to the San Bruno, Calif., company, the GrafixStar cards integrate video into a PC.

The GrafixStar 300 was designed for users who want to upgrade 486 PCs. The GrafixStar 500 targets graphics-heavy business applications, and the GrafixStar 700 provides performance for power applications.

Prices range from $169 to $299.

▶ *VideoLogic*
(415) 875-0606

TeleVideo Multimedia, Inc. has announced TeleMPEG Pro, TelePort and TeleView, PC digital video boards.

According to the San Jose, Calif., company, TeleMPEG Pro is a Motion Picture Experts Group-based, multicoded video playback board.

TelePort is a companion board for video capture that includes an integrated television tuner. TeleView combines both boards in one package.

Prices range from $159 to $469.

▶ *TeleVideo Multimedia*
(408) 954-8333

Plextor has announced 6Plex, a six-speed, half-height CD-ROM drive.

According to the Santa Clara, Calif., firm, 6Plex will ship with a custom device driver that will accelerate Video for Windows, QuickTime and Software Motion Pictures Experts Group videos.

No further video cards will be required.

The 6Plex internal drive costs $599; a model bundled with a 16-bit SCSI host adapter costs $649.

▶ *Plextor*
(408) 980-1838

Visioneer, Inc. has announced PaperPort 2.0 for Windows, software that lets users create desktop folders for document storage and retrieval.

According to the Palo Alto, Calif., company, PaperPort 2.0 for Windows includes a personal filing system, enhanced search capabilities, direct links to third-party applications, optical character recognition software and high-scanning resolution.

Users can designate document titles up to 32 characters in length.

PaperPort 2.0 for Windows costs $399.

▶ *Visioneer*
(415) 812-6400

Product shorts

NEC Technologies, Inc. has announced 10.4-in. screens for its high-end Versa P notebook family. One Versa P model also includes a high-resolution 800- by 600-pixel screen. Cost: From $5,899 to $6,839 per notebook. NEC Technologies, Boxboro, Mass. (508) 264-8000.... **Sigma Data, Inc.** has announced QED/TPMCA, hard drive upgrades for the IBM ThinkPad series 700 notebooks. The 340M-, 540M- and 720M-byte hard drives come preinstalled with PC DOS 7.0. Cost: From $995 to $1,495. Sigma Data, New London, N.H. (603) 526-6909.... **Circle Systems, Inc.** has announced PentaFix, software that forces Microsoft Corp.'s Excel and Lotus Development Corp.'s 1-2-3 to recalculate worksheets that may have been incorrectly calculated on flawed Intel Corp. Pentium machines. Cost: $49. Circle Systems, Seattle (206) 682-3783.... **Sycom Technologies, Inc.** has introduced Voice Input Planner 9000, a personal organizer that lets users verbally input information. The product includes auto dialing and a high-speed PC link to transfer information to and from PCs. Cost: $299. Sycom Technologies, Philadelphia (215) 222-9117.

Briefs

Multimedia swells

The worldwide multimedia PC market was four times as large in 1994 as it was in 1993, according to **Dataquest, Inc.**'s final 1994 multimedia PC shipment estimates. Multimedia PC shipments reached 10.3 million units last year, up from the 2.5 million units shipped in 1993. This represents a 312% growth rate, according to Dataquest, a San Jose, Calif., market researcher. **Apple Computer, Inc.**, with 2.4 million multimedia PC shipments last year, led the worldwide market while **Packard Bell Co.**, led the U.S. market.

Government thwarts budget bug

A Canadian software company was able to nab a potentially damaging bug found recently in the electronic version of the Canadian government's budget. **MediaLand Ltd.** in Ottawa detected the virus as it was preparing to duplicate thousands of copies of the budget for the government on diskette. Had the virus not been detected, it could have potentially infected the computer systems of Canada's major financial institutions. This is the first year the Canadian government provided electronic versions of its budgets to banks, accountants and tax consultants.

HP seeks OmniBook battery

AER Energy Resources, Inc. in Smyrna, Ga., which touts zinc-air as the battery technology of the future, said **Hewlett-Packard Co.** has asked it to develop a battery for its OmniBook 600 subnotebook. AER claims it will be able to generate 10 to 15 hours of battery life.

Dell announces moves

Dell Computer Corp. has named Richard Snyder senior vice president and general manager of Dell Americas. Snyder, who was formerly a general manager of HP's Deskjet printer group, will be responsible for Dell's operations in the U.S., Canada, Mexico and South America. The company also announced that Michael Miles, former chairman and chief executive officer of Philip Morris Co., will join the board of directors.

FirePower announces NT 3.51 support

FirePower Systems, Inc. in Menlo Park, Calif., has become one of the first PowerPC vendors to announce that its line of Powerized desktop systems will support Microsoft Corp.'s Windows NT 3.51.

IBM, Philips team

IBM and **Philips Electronics N.V.** in the Netherlands have announced a joint semiconductor manufacturing venture called SubMicron Semiconductor Technologies in Germany.

Dell reports sales leap

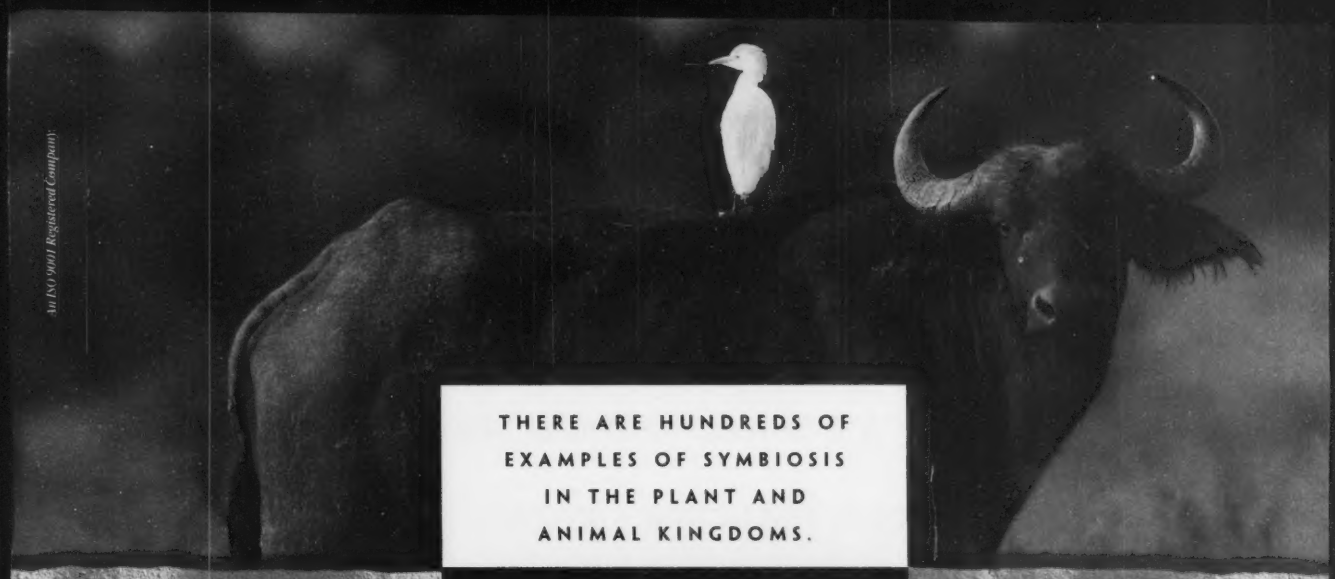
Dell reported sales of $1.03 billion for the quarter ended Jan. 29. This represents a 17% increase from its third quarter sales and is about 39% higher than the same quarter a year ago. Dell attributed the increase to strong Pentium sales.

Acer to preinstall Win95

Rising PC star **Acer America Corp.** recently became the latest on a growing list of vendors that have said they will preinstall Microsoft's Windows 95 on desktop PCs when the operating system becomes available later this year.

European software sales up

Software sales in Western Europe increased by 4% in 1994 from the previous year. And for the first time, quarterly sales of Macintosh software topped those of DOS software, the Software Publishers Association (SPA) reported last week. Total software sales in Western Europe amounted to $1.8 billion for all of last year. Unit sales for the year were up 69%, the SPA said. The association also reported that sales of Macintosh software reached $46.5 million in the fourth quarter.



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Imaging

Medical center finds cure for ailing billing system

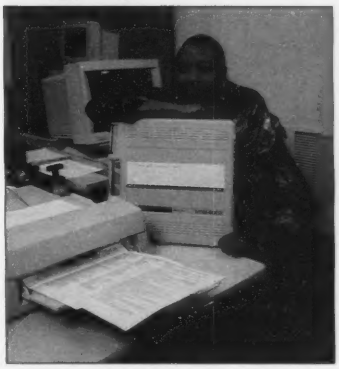
Minolta imaging system helps center track revenue

By Thomas Hoffman

Anyone who has recently been treated at the University of Pennsylvania Medical Center in Philadelphia, be warned: If a collection agency is after you for an unpaid insurance claim, chances are improving that the hospital will track you down.

That is because the medical center's department of medicine billing recently installed an automated imaging system that has dramatically improved the management of its patient billing.

In the past, patient account records were often misplaced or lost in the paper-based system the department used. As such, the medical center sent out just a fraction of the number of claims it could have been filing against secondary and tertiary insurance carriers. Residual billing averaged just $200,000 annually.



Laurie Leacraft, information technology specialist *in the center's billing department, says the purchase of Minolta's imaging system was the best money the department ever spent*

Greater return

Since the five-seat Minolta Corp. imaging system became fully operational last June, the department has sent out more than $1 million in residual billings — a return that is putting it on pace to generate 10 times more annual residual revenue.

Health care firms generally collect 60% to 75% of the residual claims they pursue, according to industry observers. Based on those statistics, the medical center would have been able to pay for the $290,000 imaging system after its first three months of use.

"It's the best money we ever spent," said Laurie Leacraft, an information technology specialist in the billing department. "With such a large volume of patient transactions on a daily basis, it was becoming increasingly difficult to respond."

Since its installation, the imaging system has been used to electronically scan 800 batches of patient accounts each month. In addition, the medical center's accounts receivable, collections and patient account staffs have retrieved an average of 3,000 documents per week.

Urgent need

The medical center's automation project is critical because the U.S. health care system continues to become increasingly complex. The influx of health maintenance organizations and the dramatic rise in paperwork associated with insurance claims has made this sector of the health care industry virtually unmanageable.

"It's an area that's been problematic for a long time, and it's getting worse," said Alan Dowling, a national partner at Ernst & Young's health care consulting group in Cleveland. As such, "there is increased desire on the health care deliverer's part to computerize" these operations, he added.

ON SITE

The University of Pennsylvania Medical Center
Philadelphia

Challenge: To increase residual revenue historically curtailed due to frequently lost or misplaced patient account records.

Strategy: Minolta's MI3MS 3000 imaging system.

Results: Quintupled its annual average residual billings — from $200,000 to more than $1 million — in the first six months of operation.

Worth their while

The billing department's Minolta MI3MS 3000 system, which includes a file server, database server, optical server and optical jukebox, connects to three end-user retrieval stations and two scanning stations over a Novell, Inc. NetWare 3.12 LAN. Leacraft said she was close to purchasing a microfiche-based system before learning about Minolta's write-once, read-many technology.

"Even though microfiche would have been less expensive, the two-week turnaround on documents that had to be fiched and sent back to us would have been much slower," Leacraft said.

With the Minolta system, the medical center's accounts receivable agents can now key in a batch number for a patient's record, click on a mouse and call up a file within seconds. "It's doing exactly what we had anticipated it would do — retrieve an explanation of [patient] benefits in a timely and efficient manner," said Robin Alston, manager of accounts receivable at the medical center.

Netpower offers RISCy alternative

Fastseries SMP server runs Windows NT faster but could face tighter market

By Jean S. Bozman
SUNNYVALE, CALIF.

Some like pepperoni on their pizza, some like salsa on their chips, and some like to run Microsoft Corp.'s Windows NT on fast RISC processors.

The latter is true for users of Netpower, Inc.'s NT workstations and servers, which have been on the market for about 18 months as snappy alternatives to Intel Corp.-based PC servers. This month, the Silicon Valley start-up started shipping dual-processor symmetrical multiprocessing (SMP) servers to compete with higher-priced Unix-based RISC machines.

Early users of Netpower servers said they plan to scale up their Windows NT applications to run on the hardware. But industry analysts warned that the 2-year-old firm faces a shortening market window as NT gets ported to many more hardware platforms.

The Fastseries SMP server is based on R4400 RISC chips from Mips Technologies, Inc., a Silicon Graphics, Inc. subsidiary. Each server runs at speeds of 150 or 200 MHz. The system uses an application-specific integrated circuit (ASIC) to maintain parallel I/O paths between the two CPUs and the system's memory and disk drives, said Netpower Chief Executive Officer Bob Miller. The dual data paths boost throughput because CPUs do not compete for resources, Miller said.

Switching over

Paul Seldes, technology director of Chemical Bank's credit risk management division in New York, said the bank unit uses two Netpower uniprocessor servers to run Microsoft SQL Server decision-support applications for 200 users. The year-old Netpower servers replaced IBM OS/2 systems that ran the SQL Server database on Intel I486-based machines.

The Chemical Bank unit has ordered several dual-processor Fastseries machines to expand the use of NT applications built with Microsoft's Visual Basic and Sybase, Inc.'s PowerBuilder, Seldes said. Performance was a key issue for Seldes, who said that one NT application ran six times faster on the Netpower RISC hardware than it did on I486-PCs running OS/2.

Compared with Unix RISC machines, he said, "We found that without a significant benefit in performance, the [Unix server] pricing would have been considerably more, about double."

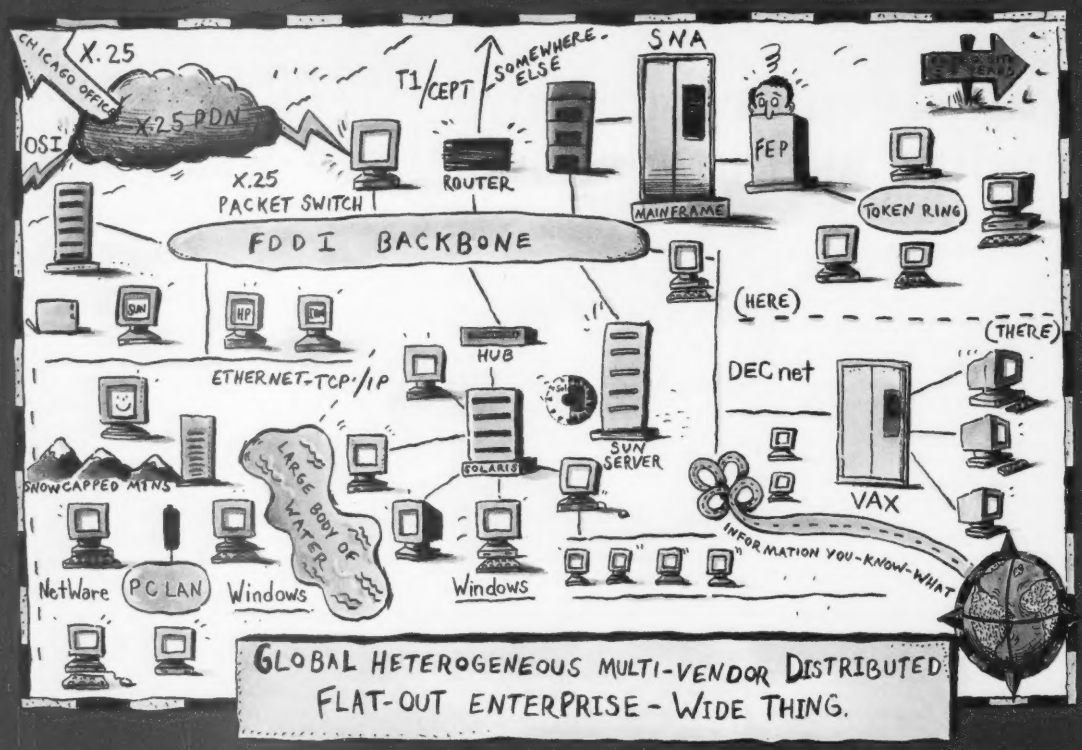
Adesa Corp., a 16-site car auction firm in Indianapolis, bought Netpower servers to build an environment in which all the pieces neatly fit together. Among the key elements are the NT server, Microsoft SQL Server relational databases and Windows applications. The $100 million firm used Netpower's NT servers to replace aging IBM System/36s about a year ago, said Steve Hicks, director of information systems at Adesa.

"We had so many sites, and we wanted to keep the costs low and the performance high," Hicks said. Similar Unix RISC servers would have cost roughly twice as much. An internal benchmark test showed that the Netpower server performance exceeded that of a Compaq Computer Corp. ProLiant

Netpower, *page 57*

Netpower's dual-processor NT machine

Processors: 150-MHz or 200-MHz Mips Technologies R4400 RISC chips
Special feature: Uses a custom ASIC to maintain parallel I/O paths to memory and disk
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Remote-access activity switches into high gear

By Tim Ouellette

Frazzled network administrators looking to accommodate remote users can turn to the many remote access server offerings at Networld/Interop '95 in Las Vegas this week.

"The market is white hot with interest for remote access and LAN switching," said Jim Metzler, an analyst at The Yankee Group in Boston. "Vendors are tripping over themselves to come out and make announcements."

The allure is great for remote access server boxes that consolidate the numerous protocols, modem banks, gateways and security requirements needed to support remote users. Remote users can then access network applications and work as if they are connected to the LAN.

Product announcements are expected from established companies, including 3Com Corp. and Cisco Systems, Inc., along with newcomers Kasten-Chase Applied Research in Mississauga, Ontario, KNX Corp. in San Francisco and Livingston Enterprises, Inc. in Pleasanton, Calif.

Money trail
By 1997, most remote access dollars will be reaped by vendors of analog or wireless modems and client/server dial-up hardware and application software, according to Forrester Research.

3Com will unveil AccessBuilder 2000, part of the San Jose, Calif., company's SuperStack stackable system of remote access servers, routers, switches and hubs. The server lets up to eight concurrent users access applications using TCP/IP, Novell, Inc.'s NetWare IPX, Apple Computer, Inc.'s AppleTalk and Microsoft Corp.'s LAN Manager and Windows for Workgroups protocols.

AccessBuilder 2000 has built-in security, client software and 3Com's Transcend network management software.

At advertising agency Andersen & Lemke in San Francisco, digital service manager Anna MacKinnon installed AccessBuilder 2000 to relieve stress on the agency's single remote port. The agency can now handle more users and has fewer problems and added security, she said.

Fred McClimans, an analyst at Decisis, Inc. in Herndon, Va., said it is significant to see major players moving more aggressively into the remote access arena and tackling an area populated with smaller firms. He also applauded 3Com's intent to target larger accounts, noting that remote technology has previously been focused on small to midsize installations.

In a similar vein, Cisco is targeting larger user sites by merging its 16-port 2511 remote access server and internetworking operating system with U.S. Robotics, Inc.'s Total Control Network Hub. The resulting AS5100 integrated access server supports up to 48 dial-up connections and costs $56,000 for a standard configuration.

Espousing an open approach to remote access, Xircom, Inc. in Calabasas, Calif., will announce the Netaccess Multiport Modem card, a PCMCIA card that inserts into an existing server on the LAN. The card works with Novell's NetWare Connect and Microsoft's Windows NT Server software.

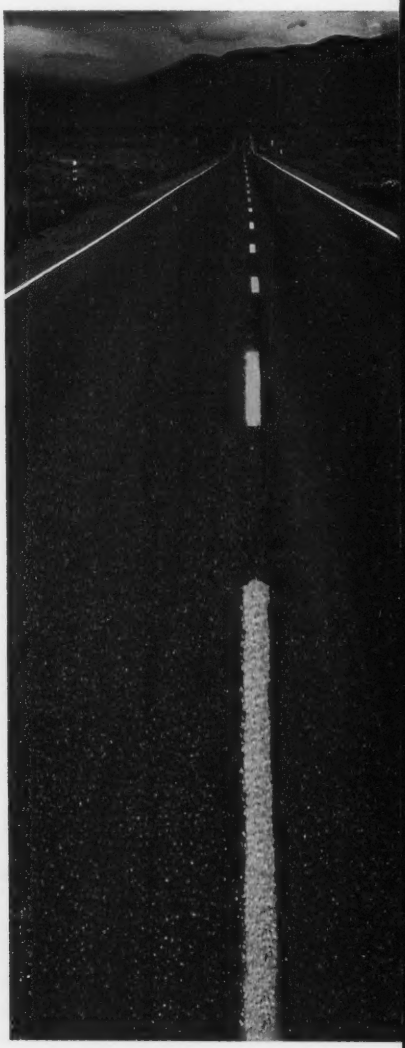
Netaccess combines eight V.34 modems on one card and connects directly to phone lines without requiring serial port adapters, external modems, cables and connectors. The four-port card costs $3,499; the eight-port card costs $6,499.

Jay Batson, senior analyst at Forrester Research, Inc. in Boston, said while most people like to buy proprietary hardware for their networking needs, some do not mind combining a product such as Netaccess with existing hardware.

"It's a minority of the market but an important minority," he said. Batson added that leaving the client software to network operating systems has its drawbacks because most successful vendors in the market such as Shiva Corp. have done a good job on the client side.

Which route would you take





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Shiva adds TCP/IP to LanRover

By Suruchi Mohan

Riding the popularity wave of remote access, Shiva Corp. recently announced an upgrade to its LanRover product line.

Out of Release 3.5's myriad features, perhaps the most important to users is support for TCP/IP and Dynamic Host Control Protocol (DHCP).

"TCP/IP support is very important because that's the direction of our company," said Garry Hurkens, a senior systems engineer at Petro Canada in Calgary, Alberta. Hurkens said he is pleased that NetManager, which earlier ran only on IPX, can now run on TCP/IP.

Consequently, administration — adding users, reloading software, administering ports — has become a lot easier, Hurkens said. In the past, Petro Canada used Telnet because Shiva only supported IPX, which is not allowed on the company's network. "Telnet was awkward and cumbersome to do user adds and deletes," he said.

A user at a large international company, who requested anonymity, agreed. He said IP support lets the company fold LanRover in with other management products that use TCP/IP. Additionally, increased IP support means administrators do not have to load a Telnet stack to administer the network.

Shiva has added the following features to Release 3.5 of LanRover:

- Windows 95 support
- STAC data compression
- On-line documentation
- X.25 support
- Graphical configuration
- Centralized user lists

DHCP support, which is used to assign IP addresses, is a big boon for Steve Engel, a network engineer manager at Minnesota Mutual Life Insurance Co. in St. Paul, Minn. "It is nice to be able to integrate DHCP. We don't have to tie each port with a specific IP address. [LanRover] will search for the DHCP server and get the next available IP server for the subnet, which is very big for us," he said.

Additionally, because of DHCP support, remote sites do not need a specific address. With the IP stack compatible with DHCP, users receive the address of the remote site every time they log on. This also helps if somebody leaves or if new devices are added to the network because administrators do not have to go through support issues, according to Engel.

Other administrative issues that Version 3.5 addresses are security related, such as TACACS support. TACACS is an authentication protocol similar to Kerberos that is used between two devices. LanRover 3.5 also provides dial-back for Windows clients dialing into the remote server. Additionally, servers can be configured to allow users to change their expired passwords.

Close relationship

The guts of LanRover 3.5 are very close to Windows 95, said Steve Engel, a network engineer manager at Minnesota Mutual. Consequently, the Shiva hardware will not have to change to accommodate Windows 95. "That's a big deal," he said.

"TACACS support is very good industrial-grade stuff for users trying to protect clients," said John Girard, a research director at Gartner Group, Inc. in Stamford, Conn. However, he said there is currently no method to secure remote users' systems if they are stolen. "No one has addressed the" issue, he said.

"Shiva is coming along in management," said Val Sribar, vice president at Meta Group, Inc. in Reston, Va. It offers Simple Network Management Protocol (SNMP) support, but right now its management application runs on a standalone platform.

Sribar said remote-access companies need to create management applications that run on an SNMP platform, such as Hewlett-Packard Co.'s OpenView and IBM's NetView.

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Consistent Architecture with SP2	No	Yes
Index Scan	No	Yes
Inserts	No	Yes
Selects	Yes	Yes
Updates	No	Yes
Deletes	No	Yes

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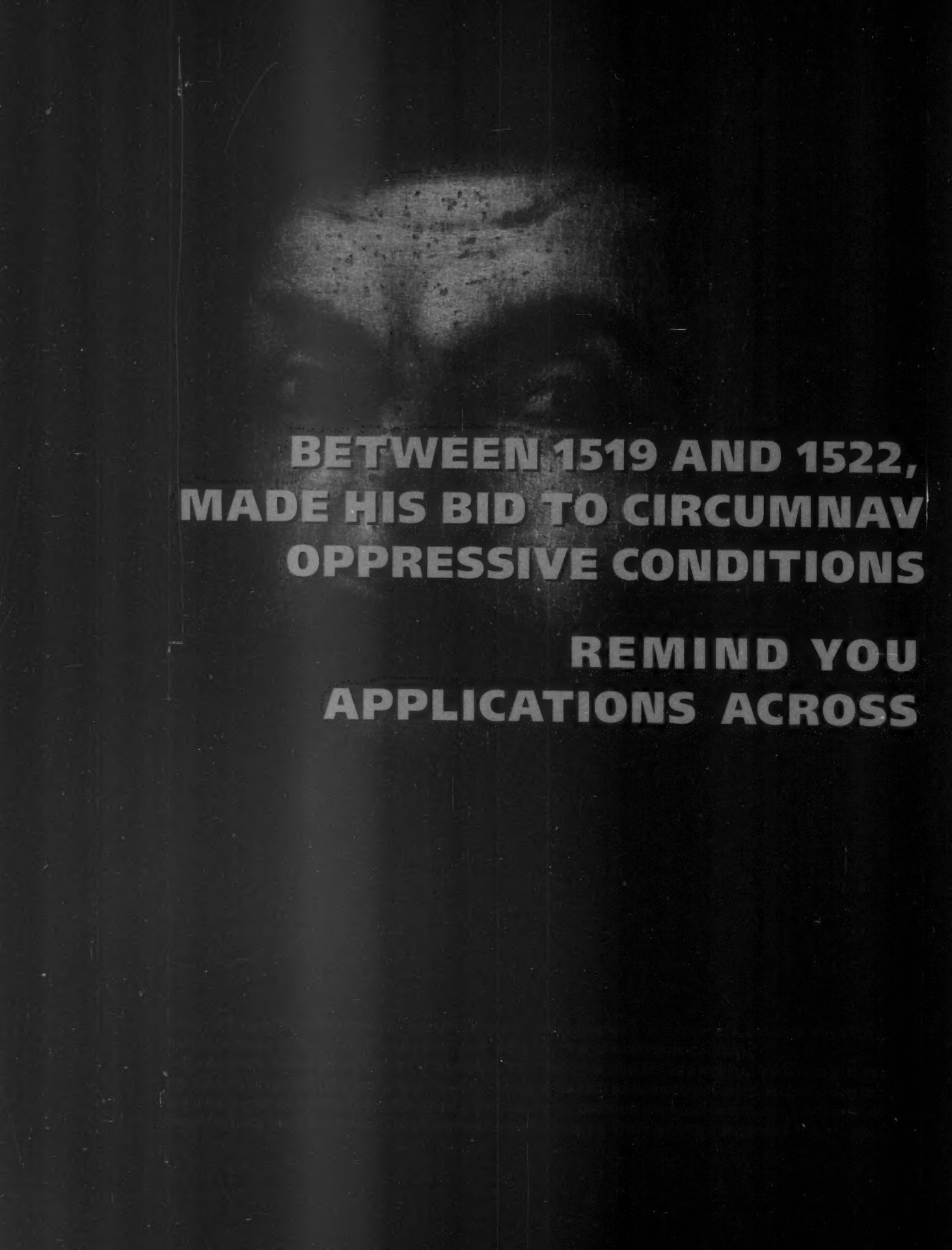
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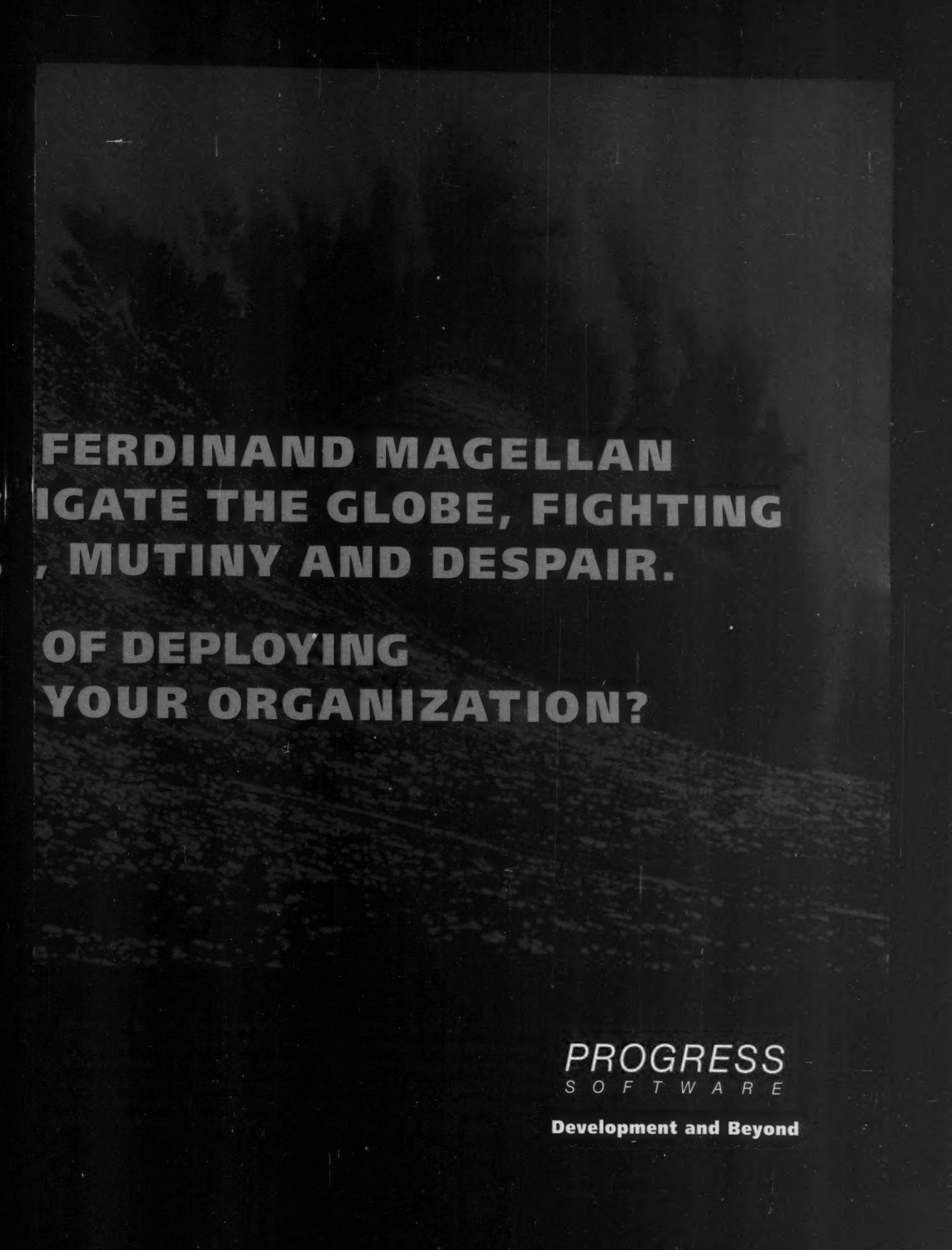
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On June 15, Meet the 25 Top Users of Client/Server Technology

in a special edition of Computerworld Client/Server Journal

CLIENT/SERVER EXCELLENCE

The Magazine

Client/Server. Where's it at in the real world? You'll find out in a special June 15 edition of Computerworld Client/Server Journal. With the expertise of Cambridge Technology Partners, a world renowned client/server consultancy, we surveyed more than 250 North American organizations to gauge their client/server prowess. Our special issue will list the 25 top most effective users of client/server technology by measuring their:

- *Investment in infrastructure.*
- *Application architecture and deployment.*
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- *IT management philosophy and culture.*

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On June 15, at DCI's **Database & Client/Server World** in Boston, you're invited to a panel discussion at 9:30 that includes the Top Three companies, the survey judges and moderator Alan Alper, editor of Computerworld Client/Server Journal. Hear firsthand what went into selecting the Top 25 and how these organizations made client/server work for them.

For more information on this panel, call (508) 470-3880.



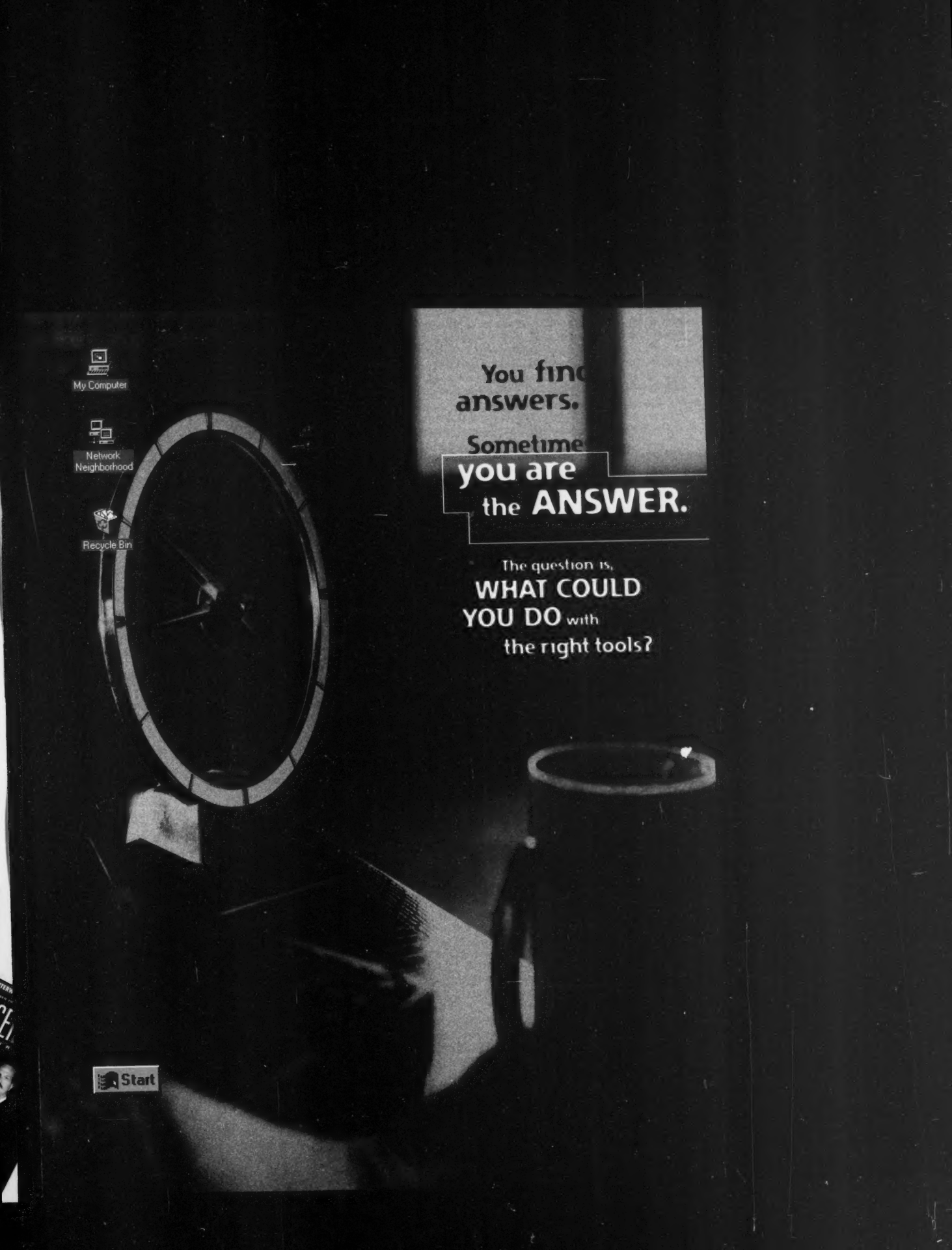
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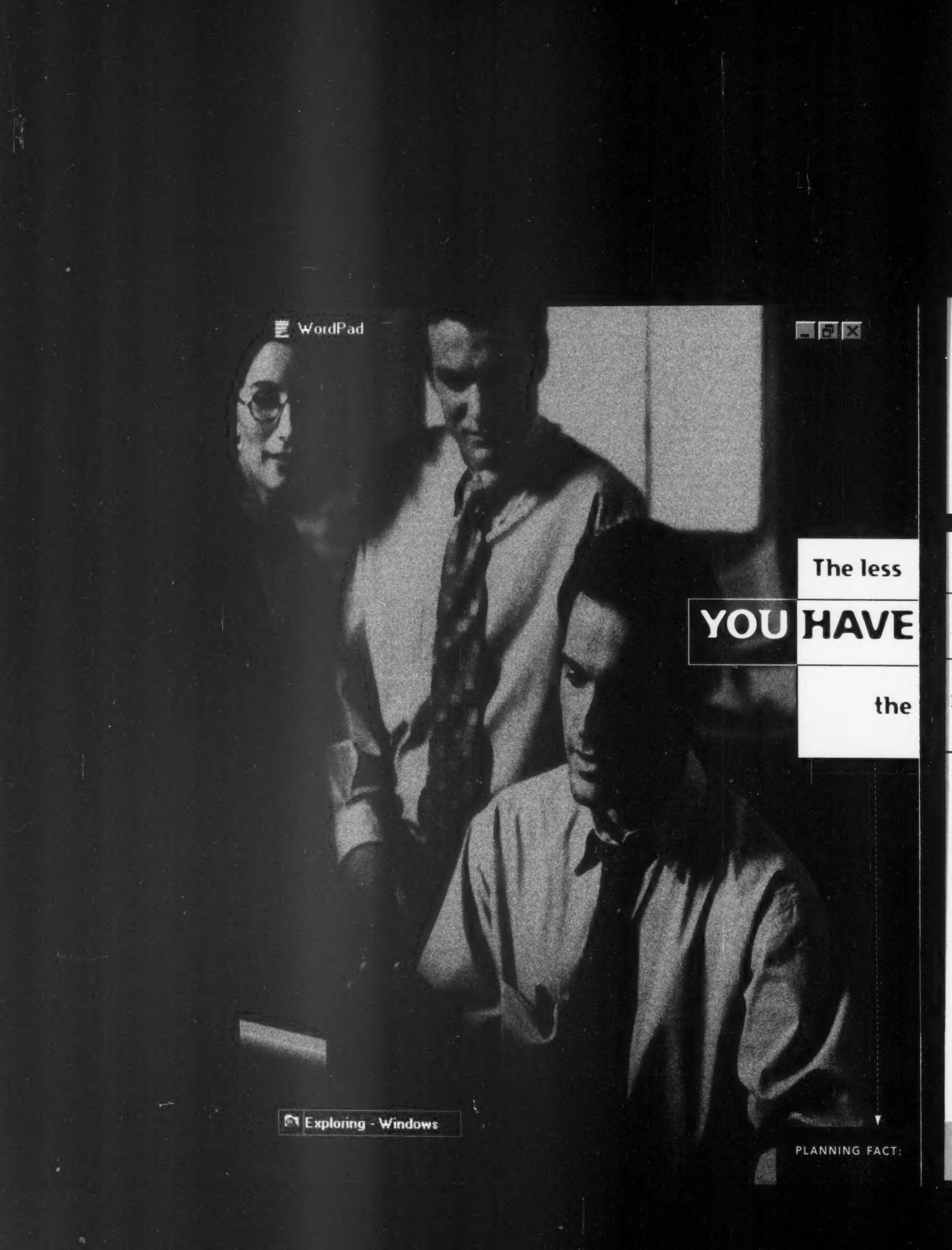
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My Computer
Network Neighborhood
Recycle Bin
Start
You find answers.
Sometimes you are the ANSWER.
The question is,
WHAT COULD YOU DO with the right tools?


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The less
YOU HAVE
the
Exploring - Windows
PLANNING FACT:



The system helps users help themselves. It's more intuitive. It's easier to use. It has built-in networking. And it's more reliable. With Windows 95 you stay ahead of the curve. How did you get along without it?

TO HELP each INDIVIDUAL

more you can help everybody.

Easier Network Integration

The Microsoft® Windows® 95 operating system lets you spend less time worrying about network integration issues. Right out of the box, Windows 95 supports all major networking protocols. It includes full 32-bit, protected-mode versions of TCP/IP, IPX/SPX, and NetBEUI, and full Novell® NetWare® and Windows NT™-based clients. With vendor-supplied additions it supports Banyan® VINES,® DEC® PATHWORKS,™ SUN® NFS and more. Your network clients are faster, more reliable, and use no conventional memory. Backup agents for most popular server-based backup systems are built-in. Windows 95 also lets you run management and configuration tools remotely. Much of the troubleshooting you've done in person can now be done over the network.

Greater System Reliability

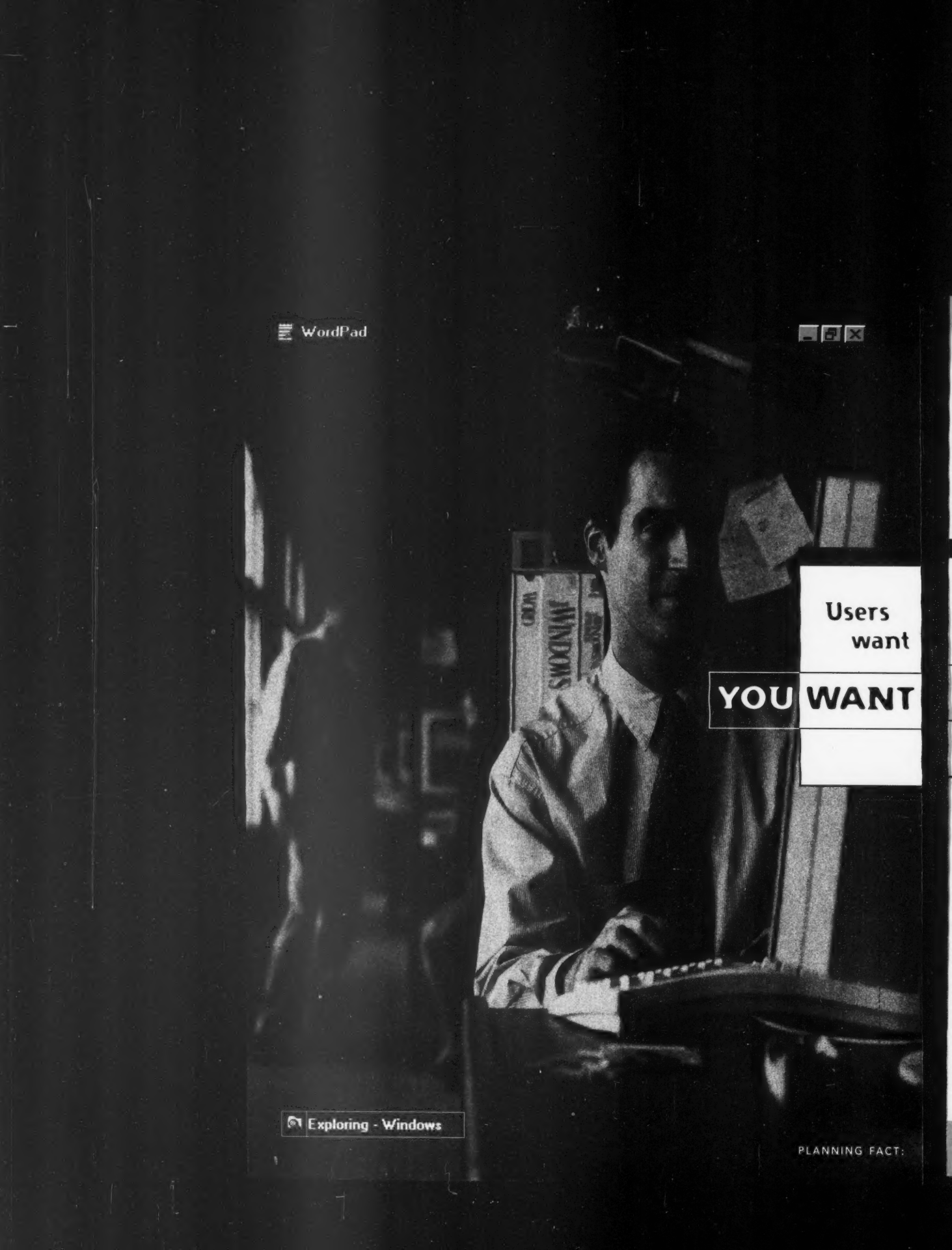
Windows 95 can reduce downtime and support calls through better use of the system's resources. It isn't a layer on top of MS-DOS® It is a complete operating system with 32-bit, protected-mode subsystems to keep your PCs running. So there's little chance of Out of Memory messages and your existing Windows-based applications can be run more reliably. The new Win32®-based applications offer an even greater level of reliability with separate memory address areas and separate message queues to prevent them from interfering with each other.

Simplified User Interface

Windows 95 makes navigating the system easier for every user. There are fewer concepts to learn, a more consistent, more intuitive layout and improved, unified, on-line help. Users find answers to their questions without having to call you. With long file name support, users can find files more easily. The Start button offers a single, streamlined point of access for nearly everything they want to do. A taskbar is always visible so switching applications is a snap.



WINDOWS 95 IS DESIGNED TO WORK WITH THE HARDWARE YOU ALREADY HAVE. IT RUNS AS WELL AS WINDOWS 3.1 ON A 386DX WITH 4 MEGS OF RAM, AND EASILY OUTPACES IT WITH A MORE POWERFUL PROCESSOR OR MORE RAM.


WordPad
Users want
YOU WANT
Exploring - Windows
PLANNING FACT:

Bring Windows 95 to the desktop and you can bring balance to your organization. You can customize and automate installation. You can control nearly everything from your desktop. You can let multiple users share a single PC. Nobody's the wiser. Everybody wins.

FREEDOM

CONTROL.

Centralized Control

Windows 95 gives you one simplified, unified, "mini-database" for all your configuration files. The Registry eliminates the confusion of config.sys, autoexec.bat, .INI files, etc. It allows user-specific settings, like personal desktop preferences and network access. It includes PC hardware-specific settings. It includes system policies, which allow IS professionals to control configuration and override user settings.

Remote Control

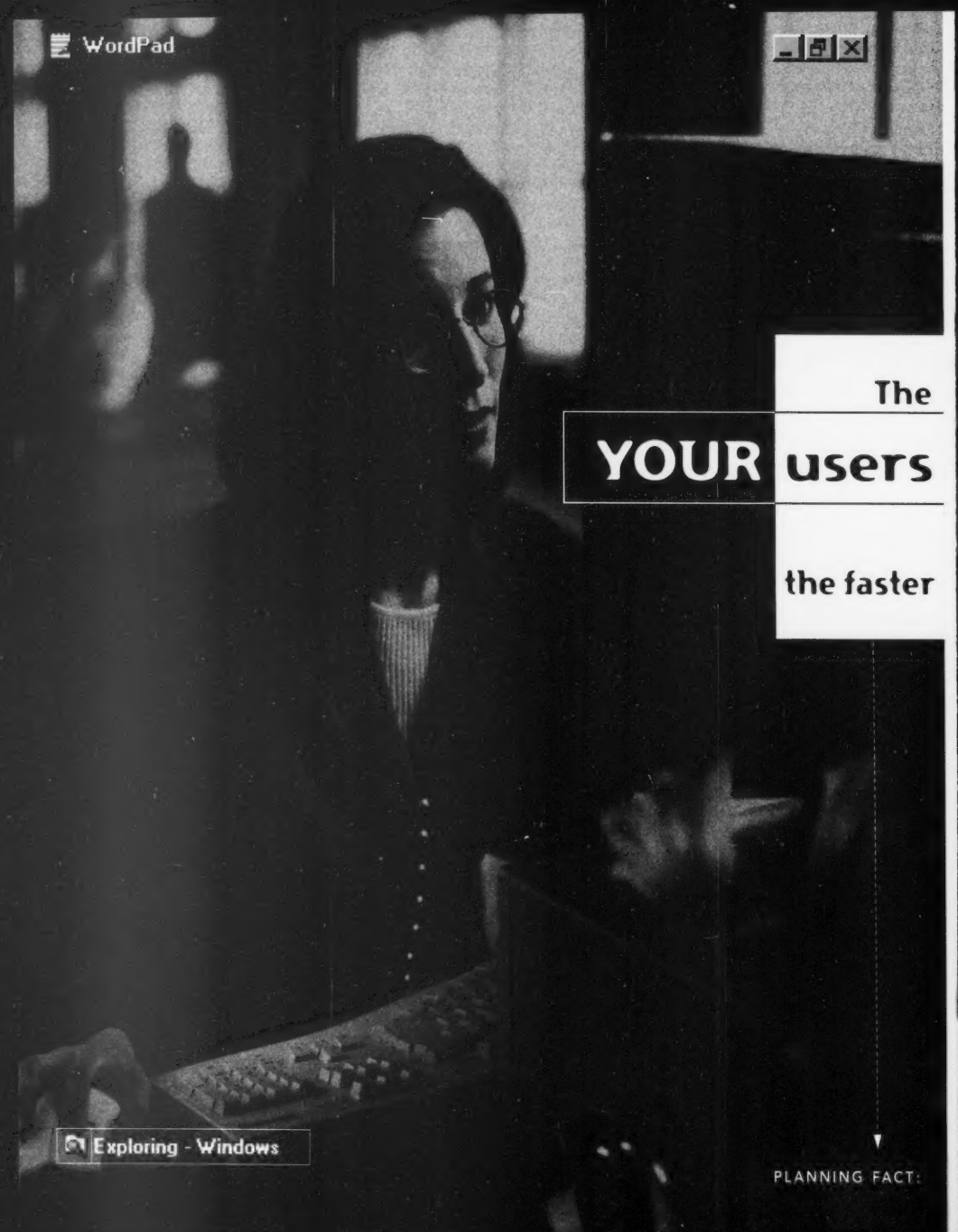
You can install the Windows 95 operating system on your users' PCs without leaving your desk. Control which parts of the system you install, and automate the procedure. You can decide who has network privileges, access to control panels and even which applications users have access to. The Registry lets you efficiently manage and support each of your user's desktops. You can change individual user preferences and privileges. You can make global changes that affect all users. You can remotely monitor systems and performance for more efficient troubleshooting. By using network management applications designed for Windows 95, you can access the Registry locally and remotely. Windows 95 includes agents for management standards such as Remote Procedure Call (RPC), Simple Network Management Protocol (SNMP) and, shortly after release, Desktop Management Interface (DMI).

Crowd Control

You control network access from a single location, where validated user logon is authenticated by the security structures of Windows NT Server and Novell NetWare. User Profiles allow different users to log onto any connected PC and see "their own" desktop. Each name and password retrieves a user profile from the Registry, dictating desktop layout, fonts, network connections, shared resources and access privileges to applications and data. Users can work productively anywhere on the network.

Microsoft® Windows®95

WINDOWS 95 IS DESIGNED TO WORK WITH YOUR EXISTING MS-DOS-AND WINDOWS-BASED APPLICATIONS AND DEVICE DRIVERS.


WordPad
Exploring - Windows
The
YOUR users
the faster
PLANNING FACT:



Now everybody on your network can work faster. Work smarter. Work together. Work whenever they want to work. From anywhere on the network. Get information wherever it's located. Even if they're not in the office. Quickly and easily.

faster

CAN DO what THEY HAVE TO DO,

they can do what they want to do.

Faster Computing

Windows 95 gives your users new ways to get things done. Procedures are simplified. The interface is more logical. It takes fewer steps to accomplish many tasks and even less time to figure things out. With Windows 95, users can accomplish more. Preemptive multitasking and multi-threaded applications let them work on several things at once. The Win32-based application programming interface and OLE give a new generation of applications unprecedented speed and power. Usability Sciences, Inc. found that users finished tasks in nearly half the time they required in Windows 3.1.* Plug and Play goes a long way toward eliminating disruptions for you and your users. Windows 95 recognizes changes made to hardware and reconfigures itself, without rebooting. Even systems that need reconfiguration regularly can be managed automatically. Plug a notebook PC into a docking station and the system automatically adjusts all new settings. Mobile users can change PCMCIA cards as easily as, well, changing cards.

Take A Shortcut

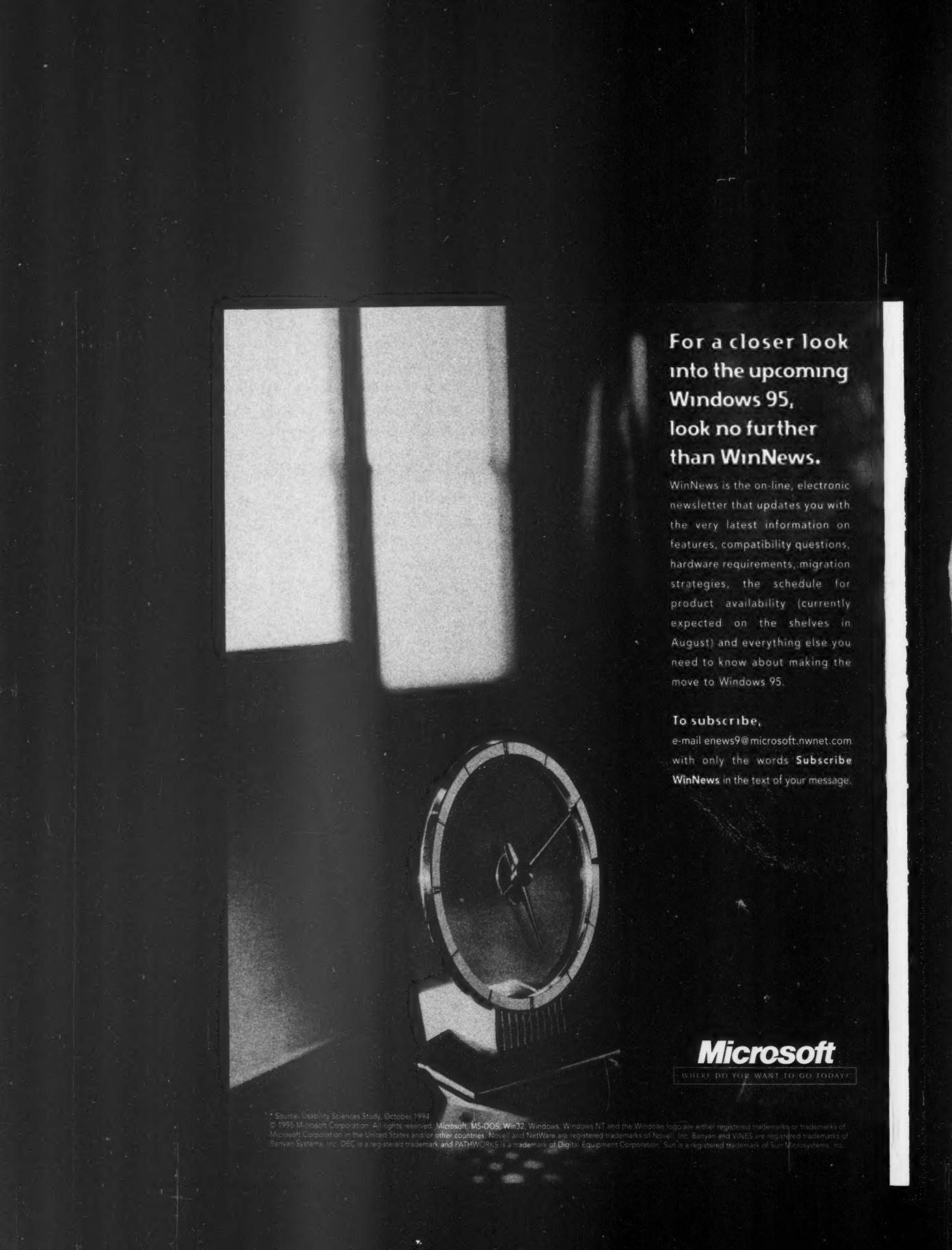
Windows 95 allows users to create shortcuts in the tangled world of the network. Once a resource is located, they simply create a desktop icon and in one click they're there. Create a simple, intuitive desktop that gives users one-step access to resources they use all day. Shortcuts can then be e-mailed between users without burdening the network and server with multiple copies of routed documents. Users can even drag a shortcut from the upcoming Microsoft Network online service.

Remote Possibilities

Dial-up Networking (remote access services) lets users on the road connect quickly and easily to frequently used networks. Desktop layouts of mobile computers look exactly like the PCs in the office, including shortcuts. And every time a person connects to or disconnects from the network, selected files can be automatically updated. Microsoft Exchange offers remote, as well as on-site users, a one-stop location for viewing and working with all types of information, from electronic mail and faxes to documents and public folders.



USABILITY SCIENCES, INC. FOUND THAT AFTER A BRIEF SELF-GUIDED TUTORIAL, USERS WERE ABLE TO PERFORM COMMON TASKS NEARLY AS QUICKLY ON WINDOWS 95 AS ON WINDOWS 3.1 DURING THEIR VERY FIRST ATTEMPT. AND BY THEIR THIRD REPETITION, USERS WERE NEARLY TWICE AS FAST.*



For a closer look into the upcoming Windows 95, look no further than WinNews.

WinNews is the on-line, electronic newsletter that updates you with the very latest information on features, compatibility questions, hardware requirements, migration strategies, the schedule for product availability (currently expected on the shelves in August) and everything else you need to know about making the move to Windows 95.

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WHERE DO YOU WANT TO GO TODAY?

* Source: Usability Sciences Study, October 1994

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Corel Video Station touts carefree PC-to-PC video

By John Marquette

Imagine setting up PC-to-PC video without worrying about the impact on your network. That's the promise of the Corel Video Station from Corel Corp., maker of Corel Draw.

Corel is one of a handful of companies trying to make better use of the wiring in corporate network installations for advanced video services. Corel Video Station, now in beta testing, relies on unused Ethernet wiring — typically the one or two extra pairs of wires installed but unused at most Ethernet sites.

Those two unused wires provide all the bandwidth necessary for audio/video signal transmission, creating an alternate path to desktop audio/video.

This allows Corel to bypass many standards and compatibility roadblocks inherent in systems designed to share bandwidth data on the network wire.

Two of a kind

The two-wire approach is similar to Bell operating company pilot projects to distribute voice, data, TV and two-way audio/video communications to households.

Corel Video is currently undergoing an in-house beta test with approximately 100 users and has been used successfully for more than a year.

Fundamental to its design are the analog audio and video signals sent over the two unused wires. The wire must comply with the specifications for Category 3 twisted-pair cable.

None of the expensive equipment associated with sending video over a network is required, such as high-speed Ethernet, Token Ring or fiber network interface cards, switched hubs or Asynchronous Transfer Mode.

Because the signal is analog, there is no lag between the video and audio or delay between the parties in conference. The jerkiness associated with desktop conferencing products is also absent.

PRODUCT test DRIVE

Corel Corp.
Ottawa
(800) 836-3729

■ Corel Video Station allows PC-to-PC video without impacting the network. It utilizes extra pairs of Ethernet wiring that most corporate sites do not use. Projected per-seat price will be $1,750.

■ The product is still in beta testing and will be generally available in July. The main components of the package include a modem-size external box, the Video Station; a camera unit mounted on a monitor; and a line card installed in an ISA bus.

The following are the three components:

- **Corel Video Station.** Located anywhere near the desktop, this is a modem-size external unit that contains all the connectors for the LAN pass-through connection, a National Television System Committee (NTSC) standard monitor, speakers, camera, microphone and headset.
- **Camera unit.** This connects to the Corel Video Station and may be mounted on top of the PC monitor or television set. Its design provides maximum eye contact between participants, eliminating a common teleconferencing complaint about how distracting it is to speak with someone without eye contact.
- **Line card.** This is installed in an Industry Standard Architecture (ISA) slot in a PC connected to the network. That PC is then designated a switch and provides call and connection management to users on the network. The switch transparently connects audio/video signals to the requesting user, much like a TV tuner.

Each line card has 16 connections; the number of line cards installed in a PC is limited only by the number of available slots.

Included in the package is a patch cable that breaks the two necessary wires out from the standard Ethernet RJ45 connector to which networked PCs usually connect.

Independent capabilities

It becomes necessary to add another switch when the length of the wire exceeds 100 meters. The audio/video capabilities of the product are not dependent on or tied into network bandwidth. This means that regardless of how many users are sending and receiving audio/video signals, the network performance is not adversely affected, and there is no aggregate effect.

Desktop PC software requirements include either Windows or Windows NT; a Macintosh version is in development. Hardware requirements include a standard NTSC monitor or a video overlay card on each PC to display video, and a sound card. Any color TV will also work.

The first version will have point-to-point video and audio. With third-party hardware, it will also have multipoint video and audio. Outside calls will be enabled through different methods and providers.

The projected price per seat is $1,750 per desktop system.

Marquette is communications director at Computer People Resources.

Netpower

CONTINUED FROM PAGE 49

running Adesa's custom applications, he said.

Netpower still has to overcome users' concerns that it is too small — with about $20 million in sales and 65 employees — to be a strategic partner. "The underlying microprocessor is an excellent processor for NT," said Hugh Bishop, manager of emerging technologies research at Aberdeen Group in Boston, noting that Microsoft used Mips chips in its initial NT development efforts. A Mips spokesman said Microsoft uses several types of Mips machines, including Netpower's, for NT development. Microsoft confirmed its use of Netpower machines for NT testing and its inclusion of Netpower in its marketing seminars.

But, as with any small company, some users may ask Netpower "whether they have the resources, professional services and implementation support" that a large user requires, Bishop said. Some Netpower users say they could move their NT application to other RISC hardware if necessary. NEC Technologies, Inc. and Siemens/Nixdorf Information Systems, Inc. also sell NT-on-RISC Mips machines.

George Weiss, director of Gartner Group, Inc.'s Midrange Computing Platforms service in Stamford, Conn., said Netpower must team with more software firms to deliver a total systems package. Otherwise, he said, "they've got to keep justifying that they have better power and performance" than Unix RISC machines. "The question is whether they can get over the threshold of being a small company," Weiss said, "and gain a real momentum in the marketplace."

Tricord Systems expands server product line

By Jaikumar Vijayan

■ **Superserver vendor Tricord Systems, Inc. last week announced two families of servers aimed at the enterprise and departmental computing markets.**

Tricord's ES8000 and ES12000 series will top the company's product line and increase the scalability, fault tolerance and symmetrical multiprocessing capabilities of its PowerFrame series of enterprise servers, Tricord said.

Topping the list of new features in the ES8000 and ES12000 series is an enhanced Intel Corp. I486-based, intelligent storage subsystem with an 8M-byte I/O cache module that significantly increases disk I/O performance. The storage subsystem is capable of supporting up to 120 and 360 SCSI devices, respectively. The ES8000 and ES12000 systems, which are based on Intel's 100-MHz Pentium processors, can support up to eight and 12 CPUs, respectively, each with a 2M-byte cache.

"Tricord is trying to increase reliability and availability while continuing to subscribe to industry standards like PCI," said Robert Harbison, president of Network Integration Consultants in Sausalito, Calif.

At the same time, though, this level of server reliability and availability comes with a price tag that vendors such as Compaq Computer Corp. and Hewlett-Packard Co. may challenge, Harbison said.

For instance, with a starting price in excess of $50,000 for the new ES-class servers, "Tricord is going to have to bring its prices down" to stave off challenges posed by such vendors, he said.

"They really have their work cut out for them on the price front," said Mike Slaughter, manager of information systems at Dechert, Price and Rhoads, a Philadelphia law firm.

The company recently purchased a Tricord ES3000 server because "for us, the most compelling reason to do so was we already had Tricord systems" installed and running major, mission-critical applications, Slaughter said.

"The systems have been very reliable and scalable, but I am not convinced at this stage that they have a real competitive edge" to justify more than a 10% to 15% price premium over PC server vendors such as Compaq, he said.

Meanwhile, Tricord also announced the DS1700, DS2500 and DS4500 for the remote office, workgroup and departmental networking applications markets.

Like the high-end servers, the DS-class servers feature error correcting code (ECC) memory, RAID support, hot-swappable disks, hot sparing, redundant and hot-replaceable power supplies and a user-configurable, battery-backed management subsystem.

A sample of specs for Tricord's new products

The PowerFrame ES12000 enterprise server:

- Up to 12 100-MHz Intel Pentium CPUs, each with 2M bytes of second level cache
- Four-channel intelligent storage subsystem
- Up to 1G byte of ECC memory
- Support for up to any combination of eight PCI and EISA network interface cards
- Redundant power supplies
- Price: Starting at $50,000

The PowerFrame DS4500 departmental server:

- Up to four 100-MHz Intel Pentium CPUs with 512M bytes of second level cache
- Up to 768M bytes of ECC memory
- Support for 2 PCI, 4 EISA and 2 PCI/EISA slots
- Hot disk sparing and replacement
- Server management with independent battery-backed remote access capability
- Price: Less than $15,000

Black & White Software, Inc. announced it will team up with **Fujitsu Open Systems Solutions, Inc.** to release Regatta-DEX, Regatta-X and Regatta-Win, workflow management software.

According to the Campbell, Calif., company, Regatta-DEX is an X Window System development environment for creating groupware applications. Regatta-X and Regatta-Win let users deploy workflow and workgroup applications developed with Regatta-DEX to Unix and Windows systems, respectively.

Regatta-DEX costs $6,900, and Regatta-X costs $2,250. Both products are for Sun Microsystems, Inc.'s Solaris platform. Regatta-Win costs $990.

▶ *Black & White Software*
(408) 369-7400

Chipcom Corp. has announced ONsemble, a 16-port workgroup switch.

According to the Southboro, Mass., company, ONsemble segments Ethernet networks into several smaller LANs.

The product can switch Ethernet and multiple high-speed LANs. It supports Simple Network Management Protocol.

Prices range from $1,825 to $14,495, depending on the configuration.

▶ *Chipcom*
(508) 460-8900

Klever Computers, Inc. has announced KleverSwitch, a six-port workgroup Ethernet switch.

According to the San Jose, Calif., company, KleverSwitch features cell-based switching that breaks incoming Ethernet frames into 64-byte packets.

The product comes with Flash memory for future software upgrades, and each port is managed by its own RISC processor. The switch is integrated with Klever's KView management software.

KleverSwitch is priced at $2,995.

▶ *Klever Computers*
(408) 467-0888

Hughes LAN Systems, Inc. has introduced the Model 1700 workgroup Ethernet switch.

According to the Santa Clara, Calif., company, the Model 1700 switch simultaneously provides full-speed line switching on up to 32 ports.

The product supports multiple media access control addresses per port and features hardware-based port monitoring.

The 16-port model costs $7,495, and the 32-port model costs $10,995.

▶ *Hughes LAN Systems*
(408) 565-6000

Kidasa Software, Inc. has announced Milestones, Etc. 4.5, project management software.

According to the Austin, Texas, firm, Milestones, Etc. 4.5 lets users do detailed scheduling. It features outlining, SmartColumns, an improved interface to Microsoft Corp.'s Project and custom date headings. A task filtering feature lets users display only the tasks that meet their criteria.

Milestones, Etc. 4.5 costs $700 for a five-user package.

▶ *Kidasa Software*
(512) 328-0167

Winfinet Software, Inc. has announced Winfinet 2.1, software that automatically logs Windows clients on to any administrator-specified server when users launch an application.

According to the Somerset, N.J., firm, Winfinet 2.1 also logs users off the server when the application is closed, reducing license requirements for the servers. A dynamic mapping approach assigns the temporary drive connection to the next available drive letter on the user's PC.

Winfinet 2.1 costs $499 per target resource.

▶ *Winfinet Software*
(908) 805-1931

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Health care industry

Network setup puts Maine on cutting edge

ON SITE

Maine Medical Center
Portland

Challenge: To stay on top of the medical field with cutting-edge applications delivered to doctors, nurses and health care providers.

Solution: To continue investing in the telecommunications infrastructure. More than 1,000 users of Novell's NetWare 3.12 LANs will be upgraded to 4.1 this summer; a conversion to high-speed Cabletron hubs is also in progress.

Results: The number of network nodes has doubled from 500 to 1,000.

By Laura DiDio
PORTLAND, MAINE

Jeff Drumm is a man with a very specific vision for his network expansion goals. The manager of microcomputer systems at Maine Medical Center (MMC) here aims to stay in the top 10% of medical facilities nationwide. How? "With a cutting-edge network setup," Drumm explained, "so we can deliver the most useful equipment and applications to our doctors, nurses and administrators and quality health care to our patients."

A 600-bed facility, MMC is the state's largest teaching hospital and third largest employer. It is affiliated with the University of Vermont, the University of Southern Maine and Westbrook College and has an internship program with Andover College. And it is about to merge with nearby Brighton Orthopedic Medical Center.

Investing millions

Maine Medical Center is a 100-year-old, 600-bed facility. In 1990, the hospital spent $250,000 on LAN hardware and network operating system purchases. This year, Maine Medical will shell out $1.75 million for networking hardware and software.

Filled to the rim

To maintain its leading edge in networking, MMC will this year spend 5% to 8% of its gross income on data and telecommunications.

"We've doubled the number of nodes on our network from 500 to over 1,000 in the last two years, despite the fact that the number of beds has remained constant," Drumm said. "I guess you could say we're putting computers in every nook and cranny and even the hallways."

The heartbeat of the network is AT&T Corp.'s WaveLAN wireless network, which allows physicians, nurses and technicians to access patient care records via mobile, pen-based laptops that are wheeled all over the hospital.

"The idea is to connect on-site mobile users who move from patient to patient within the facility — like nurses and technicians — to the hospital databases to access medical and administrative records and speed up the entire health care process for everyone concerned," Drumm said. "So the hospital staff gets instant access to whatever they need, and the patients get faster and more efficient care."

Behind the mobile network, MMC's enterprise network is the artery that delivers on-site and remote-access communications 24 hours a day, seven days a week.

MMC's current network setup is about as heterogeneous as you can get. It consists of Novell, Inc. NetWare 3.12 LANs running on Madge Networks, Inc. 4/16M bit/sec. Token Ring networks. The LANs are interconnected via Cabletron Systems, Inc. MMAC hubs.

The hospital also deploys NetWare Connect for remote dial-up modem communications as part of its Physicians Office Access Project, which connects regional physicians and practices with MMC's resources. And naturally, MMC is also connected to the Internet.

Management challenge

To maintain its "best in class" design goals, the medical center is about to embark on a network upgrade project that will include migration to NetWare 4.1 by the summer.

Ironically, MMC is not migrating from NetWare 3.12 to 4.1 because of any performance limitation with the older network operating system. The issue revolves around network management, which Drumm calls his biggest challenge.

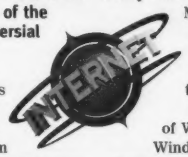
"We haven't maxed out NetWare 3.12 from a performance stand-

Maine, *page 73*

Windows 95 beta more than just a 'Preview' version

By Stuart J. Johnston

■ When 400,000 Preview program users begin receiving their copies of the final beta version of Windows 95 in the next few weeks, they will have their first chance to try out one of the new system's most controversial features.



That is because Windows 95 includes the Microsoft Network (MSN) client software, which will enable them to automatically connect to a beta version of Microsoft Corp.'s first foray into the on-line services business.

"Preview" is the name that Microsoft has given to what it expects will be the last beta version of Windows 95 before it becomes generally available in August. MSN is scheduled to roll out at about the same time as Windows 95.

Microsoft will sell final beta copies of Windows 95 for $32. The charge is intended to help defray manufacturing costs as well as costs associated with shipping both floppy disk and CD-ROM copies in each package and providing technical support to the program's users, according to Yusuf Mehdi, a product manager at Microsoft's Personal Systems division.

"There are [at least] 400,000 potential users of MSN, which would allow us to really stress the system," said George Meng, lead product manager for MSN. Meng was referring to the number of people expected to participate in the Preview program.

The MSN client code is part of Windows 95, so anyone with Windows 95 can simply dial a phone number to access MSN. Microsoft will not charge users for MSN usage during the beta period.

While pricing for MSN has not been announced, Microsoft officials have said it will probably have a very low monthly rate with various providers offering usage-based pricing for different services.

Good reviews

Some users said they like Microsoft's interface compared with those of other on-line service providers.

"[MSN] is sure easy to use compared to CompuServe. Its interface is very similar to how you access files on your computer," said Wayne Hedrick, a systems manager at a federal government installation in Newport News, Va. The MSN interface, in other words, is very similar to the folder metaphor used in Windows.

Microsoft announced in February that many PC hardware and software vendors will offer services on MSN, and the company said in January that it will provide local, direct access to the Internet in the 43 countries where it plans to offer MSN. Users will be able to interface with MSN using any of 26 different languages, Meng said. The company said it will announce more service providers as the rollout date nears.

Get your Preview here

Users interested in participating in the Windows 95 Preview program should send electronic mail to enews@microsoft.nwnet.com. The text part of the message should say "subscribe WinNews."

Clash of rivals

Microsoft hopes it can convince corporate users that MSN will provide a cost-effective alternative to highly touted services from a joint venture between Lotus Development Corp. and AT&T Corp. That venture will offer private corporate communications services access to a company's Lotus Notes databases over AT&T networks.

"You could use MSN as a way to connect all of your worldwide offices and subsidiaries" over a common network, said Naveen Jain, senior technical marketing manager for MSN.

Major vendors of competing on-line services have complained loudly that Microsoft's intent to bundle the MSN client with Windows 95 is unfair competition. Lotus Chief Executive Officer Jim Manzi, for example, recently railed against the Windows 95 and MSN client bundle in a published attack.

No easy sell

But despite Microsoft's dominance, it remains to be seen whether users, corporate or otherwise, will bite.

"It's not obvious to me that [MSN] is going to become the monster success everybody thinks it's going to be," said Duncan Davidson, vice president of Gemini Consulting, Inc. in San Francisco, an international management consulting company. "It's not at all clear that the branded networks like CompuServe, America Online and MSN will be successful long term, and it may be that the [Internet's] World-Wide Web takes off instead."

Even fans of MSN concede it may be a hard sell for corporate users. "I doubt that we'll have much need for MSN here at work, [but] it will be great for home users," Hedrick said.

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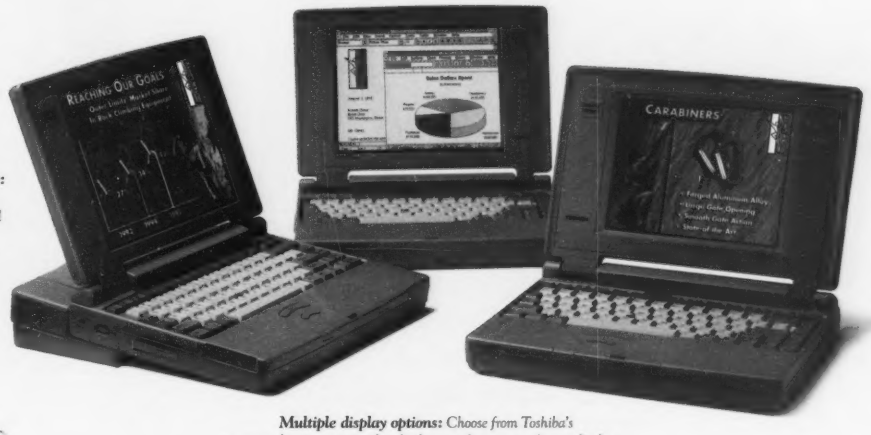


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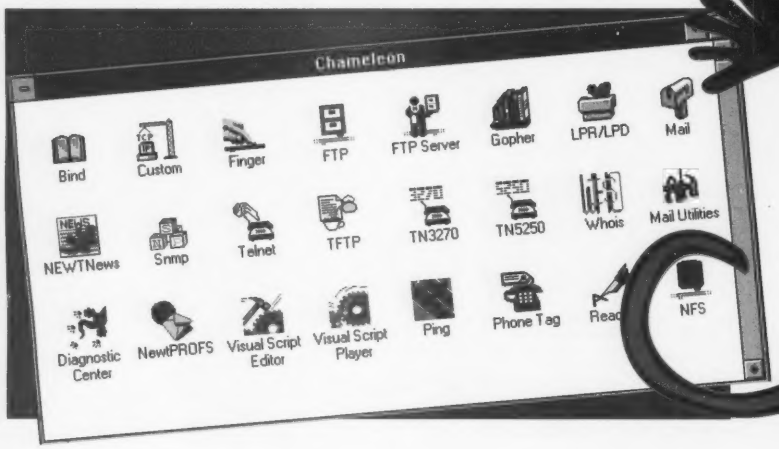
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Entergy users turn to Mosaic for help

By Ellis Booker

You won't find a corporate Web page for Entergy, the New Orleans-based energy giant, on the Internet. Yet the company is busy working on an internal use for the Mosaic browser and the World-Wide Web: It is creating a multimedia-based help and training system.

The Mosaic applications will support Automated Mapping/Facilities Management (AM/FM), a system that will put Entergy's entire 112,000 square mile, six-region service area into a geographical information system (GIS). Entergy will begin conversion to the GIS this summer.



"The reason we went to [a] different kind of computer help is that [AM/FM] is not a character-based system," said Ana Boudreaux, a senior information systems specialist at Entergy Services, Inc., Entergy's services arm. "We needed something more graphical and user-friendly."

Multiple platform availability

Boudreaux said another plus is that the Mosaic browser, developed by the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign, is available on a wide range of platforms, from Unix-based X Window System terminals to PCs.

While a number of users and integrators are exploring the use of Mosaic for this kind of application, "I haven't heard of any commercial products," said Ellen Hersh, a senior analyst in the IS training and education services research program at International Data Corp. in Framingham, Mass.



The attractiveness of Mosaic was twofold, according to Bernie Hirsch, a solutions architect at Hewlett-Packard Co.'s Professional Services Organization, which was brought in to create the Mosaic application last August.

"Number one, there were cost savings; number two is the openness, the ability to put in [third-party] applications," Hirsch said. Both the browser software and the Hypertext Transport Protocol server software were fetched from the public Internet. The GIS application was provided by Smallworld Systems, Inc. in Denver. There are 11 developers at Entergy Services allocated to customizing this code.

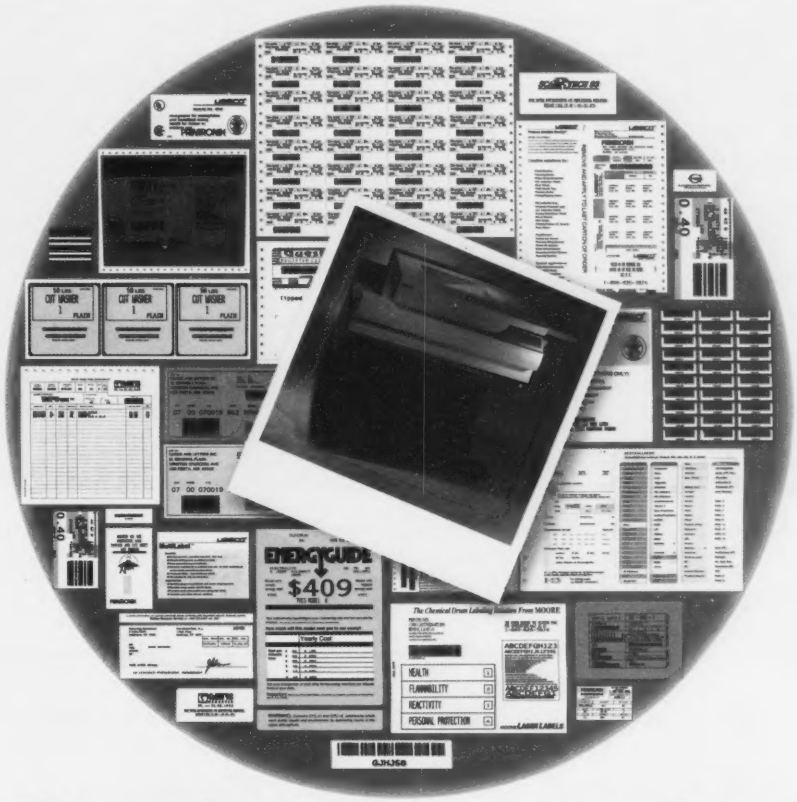
Users can trigger the Mosaic-based on-line help with a function key from within the Smallworld application. Anyone not currently using AM/FM can also access a multimedia-based training system via Mosaic.

For the Mosaic-based help and training application, HP integrated ScreenPlay, a screen recording and editing tool from Rad Technologies, Inc. in Palo Alto, Calif. "We can dub these screen recordings with audio," Boudreaux said. Users can replay instructions on how to use the GIS at any time, reinforcing the training class for AM/FM.

The servers for AM/FM are HP 9000 G70s; the client machines are HP 735s and HP 715-100s.

When complete, the distributed help and training system will be deployed to Entergy's six operating regions. There will be 200 Unix clients distributed among the regions, with about 500 to 600 users in total.

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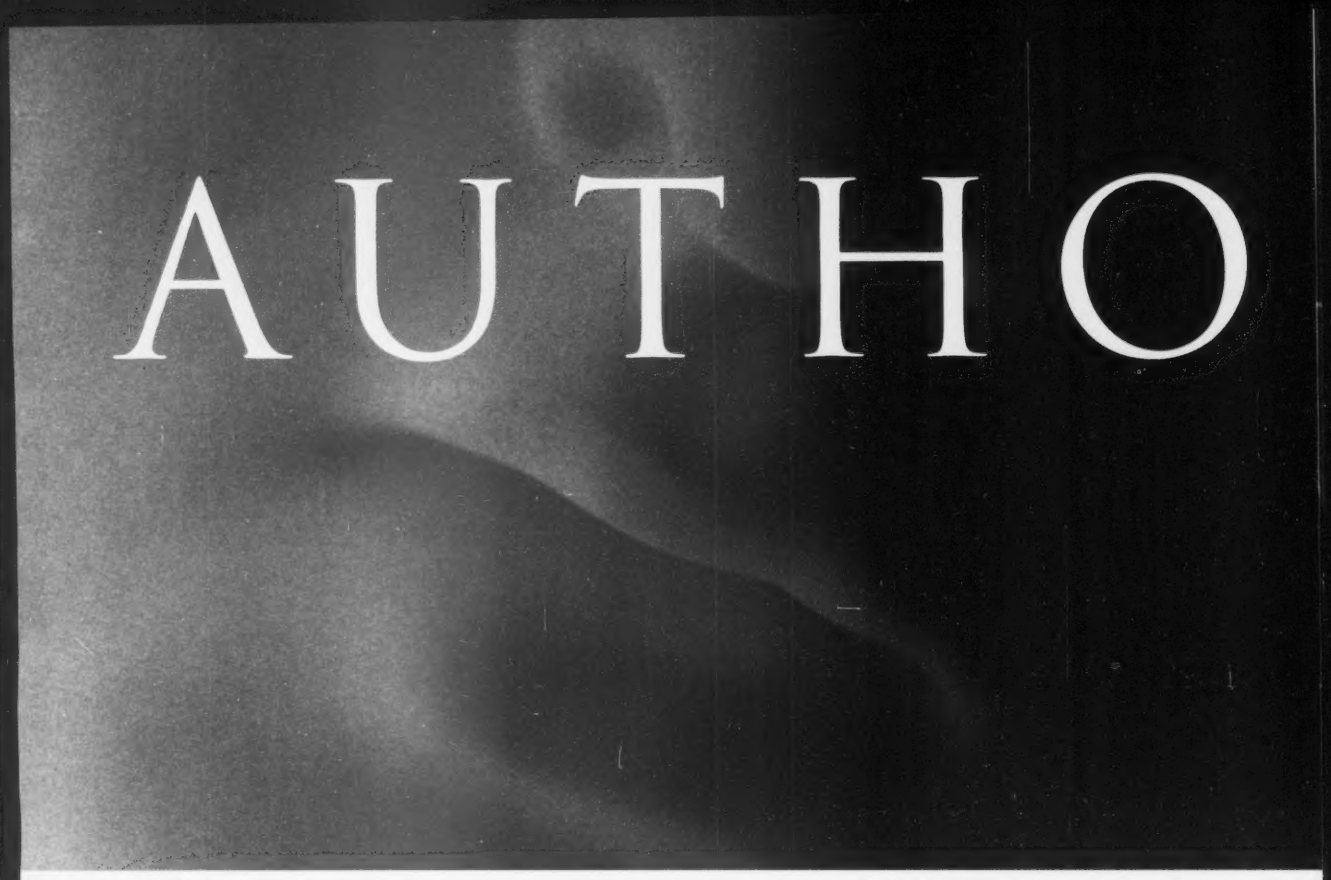
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PC MAGAZINE NETWORK EDITION, EDITOR'S CHOICE AWARD "[Windows] NT Server simply provided the best combination of features, usability, a set of full but easy to use management tools, and the simplest and most impressive installation routine of any NOS we've seen." —*PC Magazine, December 20, 1994*

1994 BYTE AWARD OF EXCELLENCE "The new version is slimmer than 3.1. It carries big loads for servers and serious business, scientific and engineering users. Its performance-monitoring and event-logging services are sophisticated." —*BYTE Magazine, January 1995*

NSTL RECOMMENDED PRODUCT "Windows NT Server 3.5 has attained top rankings in all categories of NSTL's NOS evaluation. Windows NT Server's excellent performance, ease of use, and ease of learning features combined with its excellent networking make it a strong candidate for many network environments." —*Software Digest Ratings Report, November 1994*

ANALYST'S CHOICE AWARD "Windows NT [Server], in particular went the additional mile to fit into as many environments as possible. This makes Version 3.5 an excellent choice for an applications server, integrating smoothly into NetWare and LAN Server networks." —*PC Week, November 14, 1994*

EDITOR'S CHOICE AWARD "As for the competition, NT 3.5 is certainly a worthy rival to NetWare and Vines as a network operating system platform and with Unix as a premier application server platform." —*Network Computing, December 1, 1994*

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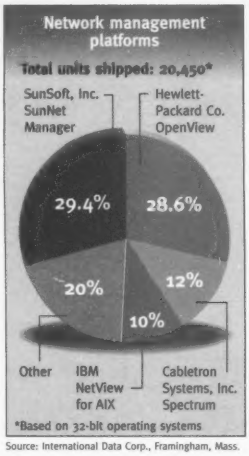
Spectrum platform spans network

By Steve Moore

Users tired of waiting for distributed management features from the traditional vendors are turning to Cabletron Systems, Inc., whose Spectrum platform already allows enterprisewide network control that can be passed among multiple consoles in far-flung peer domains.

"Anybody can write brochures. If you want to have multiple operators and multiple views of the network, Spectrum is available now, and it works," said John Scoggin, network operations supervisor at Delmarva Power & Light Co. in Newark, Del.

Other users are making the same choice. During the past year, Spectrum moved up to third place, from fourth, in the market for network management platforms based on 32-bit operating systems, according to a recent study by International Data Corp. (IDC).



Source: International Data Corp., Framingham, Mass.

"Spectrum in many ways anticipates functions that other platforms will provide in the future," said Rick Villars, director of network management research at IDC in Framingham, Mass.

Spectrum's distributed management capabilities came just in time for Lahey Clinic in Burlington, Mass., and Hitchcock Clinic in Lebanon, N.H., which recently merged to form the Lahey-Hitchcock Clinic.

Because both organizations already had networks based on Cabletron hardware, "we will be able to use Spectrum to manage the [combined] network from both locations if we choose to," said Rick Graham, director of systems integration at Lahey Clinic. For example, the network could be managed from the Lahey site during the day and from the Hitchcock site at night, he said.

Users eventually will be able to choose between Spectrum and competing distributed network management systems. But Hewlett-Packard Co.'s distributed version of its OpenView Network Node Manager has been delayed until mid-1996. And it is "still a year out before we will see distributed functions" in IBM's NetView for AIX to the extent now available in Spectrum, Villars said.

SunSoft, Inc.'s recently announced Solstice network and systems management architecture, which incorporates the company's SunNet Manager platform, will include distributed management capabilities based on SunSoft's Cooperative Consoles technology. But, Villars said, "Solstice still isn't shipping in production products, and Sun still has to get all the network hardware vendors to port their apps to Solstice. That won't happen overnight."

But Spectrum is not perfect either. In fact, it also has a significant gap in its third-party application lineup, said Dave Passmore, a principal consultant at Decisis, Inc. in Herndon, Va. "You won't find other hub vendors with management apps that run on Spectrum. They're more willing to do that with HP OpenView" because HP sells commodity stackable hubs, not the chassis-based wares that Cabletron sells.

A Cabletron spokesman said the company has developed its own applications that will allow Spectrum to manage other vendors' hubs. He also said Spectrum is being positioned as a distributed platform that can manage multivendor enterprise networks.

One drawback to Spectrum is that "it takes a lot of horsepower to run. We topped 1,500 users and 7,000 managed objects and had to upgrade our Spectrum servers," Scoggin said. Delmarva is now running Spectrum on a dual-processor Sun Microsystems, Inc. SPARC 10 machine running Solaris 2, he added.

But users were upbeat about Spectrum. "I'd like to see Cabletron develop a facilities management module so Spectrum can manage environmental controls [in] a large building," Graham said. Then, Lahey-Hitchcock's 24-hour network monitoring could be extended to facilities management, meaning critical pressure and temperature gauges would generate alerts handled by Spectrum.

Briefs

Delphi makes deal

Delphi Internet Services Corp. in Cambridge, Mass., announced a licensing and distribution deal with **Netscape Communications Corp.** for Navigator, a graphical Internet browser, and Netside Commerce Server, a secure Internet server platform.

Acquisition approved

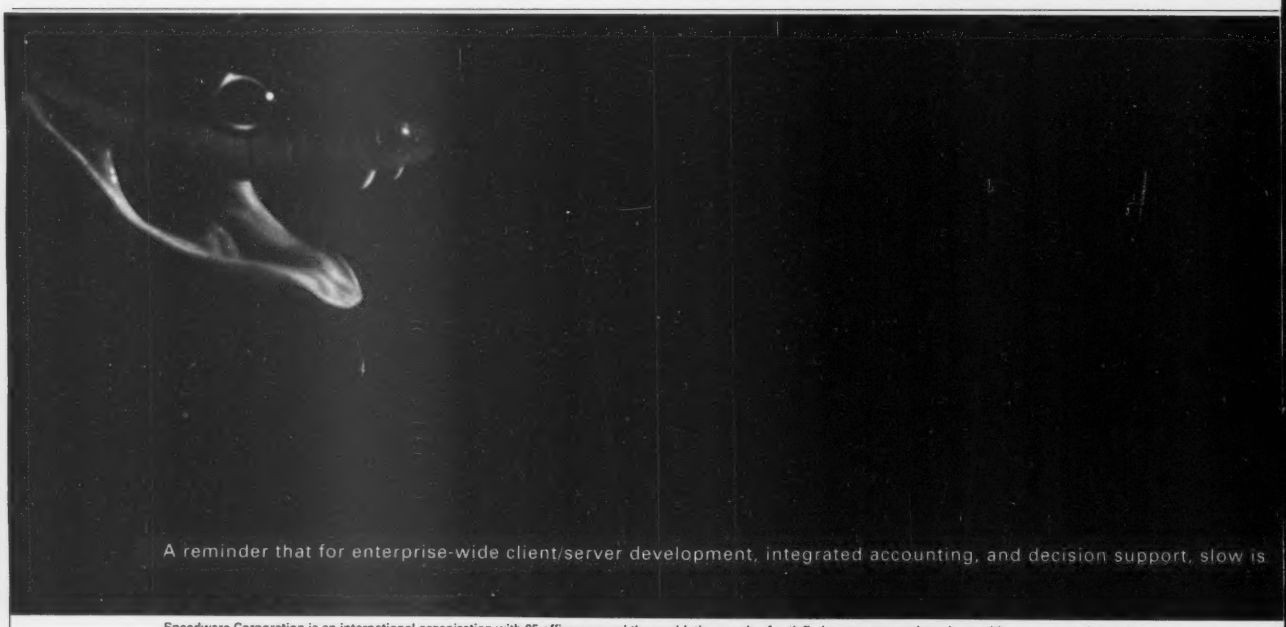
Stockholders of **U.S. Robotics, Inc.** approved the Skokie, Ill., modem maker's acquisition of **Megahertz Holding Corp.** The two companies will now operate under the names U.S. Robotics Access Corp. and Megahertz Holding, Inc. and will be subsidiaries of U.S. Robotics Corp.

Fujitsu enhances system

Fujitsu Personal Systems, Inc. has added **Proxim, Inc.**'s RangeLAN2 wireless LAN adapter to its Stylistic 500 pen-based computer.

Mail agreement

Worldtalk Corp. in Los Gatos, Calif., and **AT&T Global Information Solutions** signed a development and marketing agreement stating that Worldtalk will use AT&T's System 3000 as a platform for messaging and directory integration software. This agreement will allow users of Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Mail to communicate with users of other systems.



Speedware Corporation is an international organization with 25 offices around the world, thousands of satisfied customers, and products with a proven track record.

New products, vendor teams boost wireless

By Michael Fitzgerald
SAN JOSE, CALIF.

Last year, the Mobile '94 trade show saw the wireless cognoscenti sadly wringing their hands about the future of their industry. This year was a different story altogether, with Mobile '95 attendees sporting a "Don't worry, be happy" attitude instead.

Their perky demeanor at the show two weeks ago stemmed in part from new products and increased vendor cooperation — both expected to eventually boost the overall mobile market.

"Users are a lot better off than they were six months ago. A lot of pieces are falling into place," said Rob Balgley, vice president of marketing at Wireless Telecom, Inc. in Englewood, Colo., the first wireless reseller. Mobile "is like the Denver airport. It may not be where we want it to be, but it's a helluva lot better than what was there before."

Wheeling and dealing

On the product side, IBM released three PCMCIA wireless modems, and Wayfarer Communications, Inc. released its Enterprise Server NT [CW, March 13].

On the agreement side, McCaw Cellular Communications, Inc. announced marketing deals with both Wayfarer, a Mountain View, Calif., start-up, and Xcellenet, Inc. in Atlanta. Wayfarer's Enterprise Server NT is a remote-access tool targeted at field service forces. Xcellenet's RemoteWare is an increasingly popular sales force automation application. McCaw officials also claimed to have 50 pilot projects for Cellular Digital Packet Data under way.

While some users praised the IBM modems, other raised questions about usability.

At the *Sacramento Bee*, the information systems department is working to outfit some reporters with notebooks that use cellular modems. Some basic design issues are slowing the project, said Brian Ritberger, a network engineer at the *Bee*.

"It's a simple configuration that's turning into a nightmare," Ritberger said. The *Bee*'s publishing system runs on 10-year old Tandem Corp. systems that have 2.4K bit/sec. modem capabilities hard-coded into them. The systems do not accept data that is sent using error correction or data compression, and the AT&T Corp. cellular modems the *Bee* purchased do not work when these modes are turned off, according to Ritberger.

Another problem the *Bee* has is that the antenna on the cellular phones must be pointed straight up to make a connection, which means the phone has to be propped against a wall.

"When you have a writer on deadline who can't make a connection, for whatever reason, well, you know how that goes," Ritberger said.

Still, he said he plans to look into the IBM modems and hopes they will not have built-in error correction and compression.

Other notable show announcements included the following:

- Megahertz Corp. in Salt Lake City released Ethernet Adapter, which features its X-Jack connector device. The device is built into the PC Card and eliminates the need for an external network connector. The card will ship in May for $215.
- Racotek, Inc. in Minneapolis introduced KeyBuilder, a $995 software development tool kit for its new KeyWare wireless networking software.
- SkyTel Corp. in San Jose, Calif., shipped RetrieveFax, which enhances its SkyFax service so users can download faxes to computers. RetrieveFax costs $9.95, and SkyTel users can get SkyFax for $4.95 above their regular service fees. The fax service costs an additional 50 cents per page, or 100 pages for $25.
- Motorola, Inc. in Schaumburg, Ill., showed production versions of its Tango pager, the first pager designed to operate with the upcoming two-way paging networks. Tango will ship in May, but no pricing was available.
- Digital Transmission Services, Inc. in Woodbridge, N.J., released Zap-It, a wireless messaging service. Zap-It handles faxes and two-way paging in the RAM Mobile Data network.

Handheld harvest

Behind closed doors at the Mobile '95 show, Hewlett-Packard Co. was busy demonstrating its Geos-based handheld prototype. Sources said the box is remarkably similar to HP's pocket-size 200LX organizer but lacks Lotus Development Corp.'s 1-2-3 spreadsheet and Intuit, Inc.'s Quicken.

The handheld supports both keyboard and pen input and has a hinged screen that can flip around so the user does not have to use the keyboard.

HP officials declined to comment about possible future products.

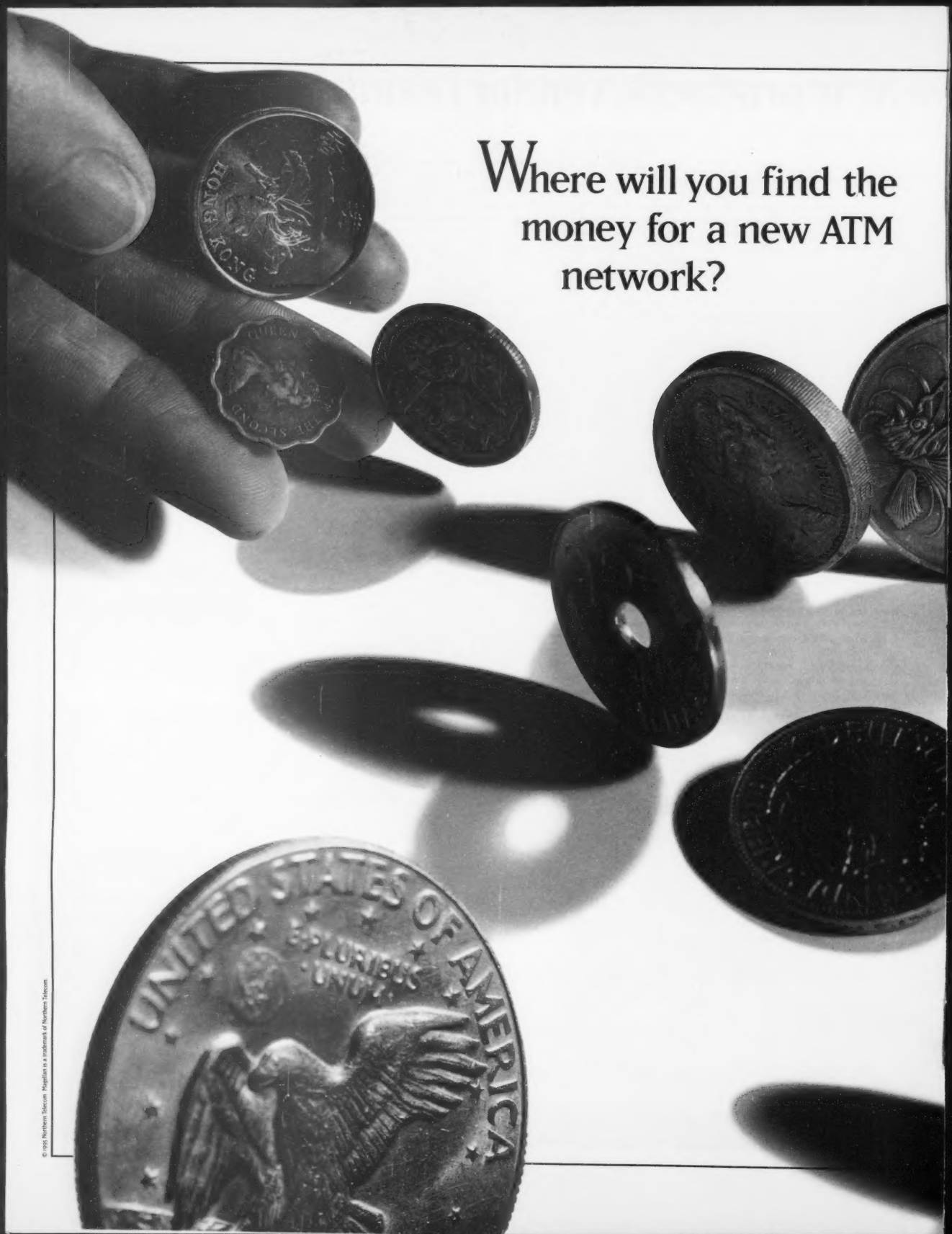
Mobile '95 also provided a backdrop for a meeting of the founding partners of General Magic, Inc. The meeting was designed to come up with ways to advance General Magic "as a de facto standard," said Gordon J. Bridge, president of AT&T's Consumer Interactive Services division.

General Magic will move one step closer to standard status this summer when it will introduce a version of its operating system with links to both Windows and the Macintosh.

But Gordon Mayer, president of rival handheld operating system maker Geoworks, Inc. in Berkeley, Calif., said "chances are very, very low that there will ever be a single standard" handheld operating system.

Mayer said handhelds are targeted toward too many different markets to allow for just one standard. He added that Geoworks is close to releasing Version 3.0 of its Geos operating system, which will include communications hooks and a first step toward links to Windows.





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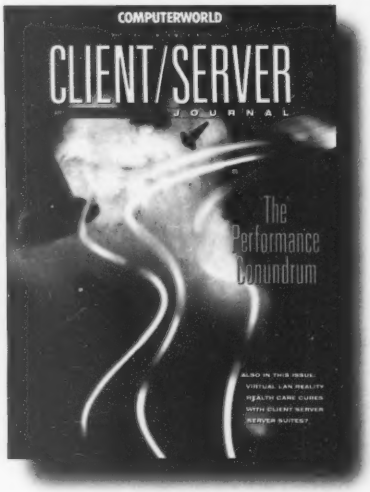
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Computerworld Client/Server Journal: Where distributed computing meets business objectives

Computerworld's bimonthly magazine on distributed computing, Computerworld Client/Server Journal gives you the information you need on the technology, managerial issues and business strategies involved in the move to client/server.

Coming in the April and June issues...

April 1 Issue



Cover Story: Performance Planning

What are organizations doing to ensure that their new distributed systems perform at levels that exceed those of the legacy systems they're displacing? *Computerworld Client/Server Journal*'s April issue examines the technologies, managerial issues and fine-tuning techniques that go into this planning process.

Vertical Market Focus: Health Care

How are hospitals and HMOs using the distributed computing model to revamp their business processes?

Product Focus: Database Management Tools

Our Test Drive feature takes a look at Personal Oracle 7. Firing Line reviews Sybase database management tools.

Don't miss our new Careers Column... a regular feature premiering in the April issue.

In this issue we profile a mainframe programmer's trials and tribulations in moving to a client/server programming environment.

Cover Story: Client/Server Goes Global

What are multinational companies doing to ensure consistent client/server implementations across their far-flung enterprises? This cover story in our June issue examines what type of technologies, tools and strategies these companies are using to create successful global deployment and how they are overcoming the cultural challenges inherent to each country they are implementing that strategy in.

Vertical Market Focus: Retail

Having survived a period of rampant consolidation, the retail industry is pulling out of the recession and ready to invest more in distributed computing. Where do retailers go beyond just "client/serverizing" their point of sales systems?

Product Focus: Application Development Tools

Our Test Drive feature looks at Borland's Delphi and Firing Line examines Informix New Era.

Careers Column: Computerworld editor Joe Maglitta's account of attending a week long "bootcamp" on client/server training.

June 1 Issue

Ad Close: April 12

COMPUTERWORLD
CLIENT/SERVER
JOURNAL

Where distributed computing meets business objectives

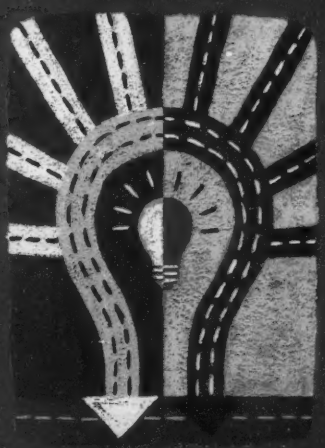
COMPUTERWORLD

MPP & SMP

Market outlook: SMP and MPP gain momentum in the corporate world

Learning lessons: Advice from early adopters

Technology options: Sizing up the hardware and software



As massively parallel processors and symmetrical multiprocessors enter the mainstream, corporate America now has two powerful, high-performance computing platforms with the potential to change the competitive landscape. An exclusive Computerworld survey of IS managers on MPP and SMP systems reveals . . .

The Future of Multiprocessing Systems



THE TANDEM CHALLENGE

■ If there was any doubt that Tandem makes the most cost-effective parallel servers on earth, independently audited TPC-C benchmarks should banish all doubt.

Tandem's Himalaya K10000 open server achieved 20,918 transactions per minute (tpmC) at a price/performance of $1,532/tpmC. That's almost *seven times greater* than the performance of any other server in the industry.

So, in the interest of friendly competition and better service to customers, Tandem issues the following challenge: "If, before July 1995, *any* vendor using *any* SQL relational database on *any* hardware platform can demonstrate higher than 20,918 tpmC at a better price/performance than that shown by the Tandem Himalaya K10000 parallel server TPC-C benchmarks, Tandem will donate twice that tpmC figure–$41,836–to the charity of that vendor's choice."

SHOW US A SERVER THAT CAN BEAT OUR PERFORMANCE, AND WE'LL DONATE $41,836 TO CHARITY.

Ladies and gentlemen, start your servers.

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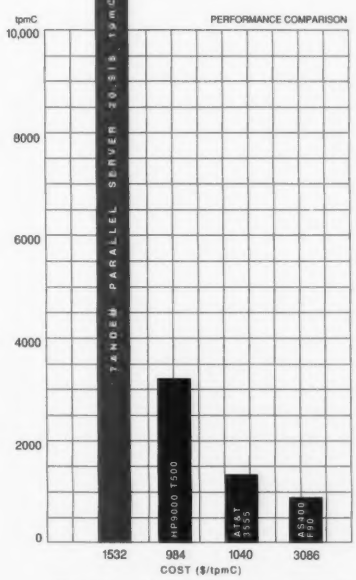
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■ To everyone who's excited about parallel processing these days... welcome to an information technology that Tandem has been developing for 20 years.

OUR MASSIVELY PARALLEL SERVERS DON'T JUST BREAK WORLD PERFORMANCE RECORDS – WE EXPLODED THEM. AND NOW WE CHALLENGE THE INDUSTRY TO BEAT OUR SCORES.

We're excited, too. Because 1994 benchmarks – the largest industry-standard benchmarks in history – prove indisputably that Tandem makes the most powerful, cost-effective parallel software and servers on earth.

In an independently audited TPC-C benchmark, a Tandem Himalaya K10000 open server achieved 20,918 transactions per minute (tpmC) at a price performance of $1,532/tpmC. As you can see from the chart, that's more than *seven times greater* than the best number of any other vendor.



"Tandem Blows Everyone Away."
Datamation, June 1, 1994

Thus, in the interest of friendly competition and greater service to all customers, Tandem issues the following challenge: "If, before July, 1995, *any* vendor using *any* SQL relational database on *any* hardware platform can demonstrate higher than 20,918 tpmC at a better price/performance than that shown by Tandem's Himalaya K10000 parallel server TPC-C benchmarks, Tandem will donate twice that tpmC figure – $41,836 – to the charity of that vendor's choice."

Many industry analysts think our record will go unbeaten for a long time – but not, we hope, unchallenged. Any takers? Ladies and gentlemen, start your servers.

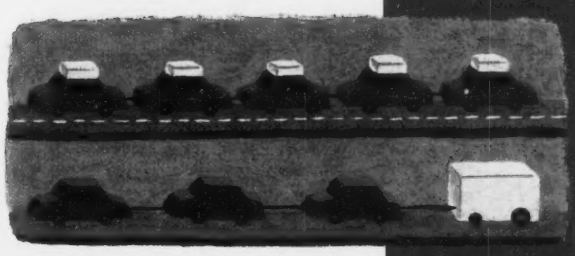
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Into the mainstream



James Steinberg

No longer the exclusive domain of scientists, MPP and SMP systems are becoming a competitive necessity as they move into the corporate work-a-day world

BY CHARLES BABCOCK

Whether you are a regional business or a $70 billion national chain, you will likely have a symmetrical multiprocessing (SMP) system or massively parallel processing (MPP) system in your future. An exclusive *Computerworld*/International Data Corp. (IDC) survey found that the SMP/MPP market is poised for growth, and not just in the world of engineering. It's gradually making its way into the business mainstream.

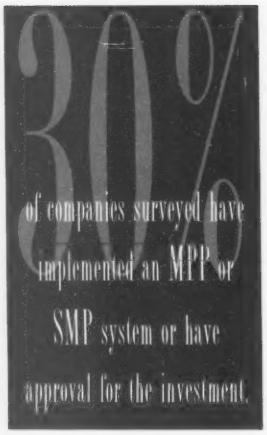
Take Mervyn's department stores, for example. Facing intense competition from Wal-Mart Stores, Inc. and Kmart Corp., this West Coast clothing and home furnishings retailer decided 18 months ago to build a decision-support system to keep its inventory in step with sales.

Mary McCormick, technology director at the 286-store chain based in Hayward, Calif., invested more than $4 million in a 12-processor Sequent Computer Systems, Inc. Symmetry 790 SMP server running Oracle Corp.'s Oracle 7.1. The system fields complex queries against 750G bytes of data. With it, store buyers and inventory managers minimize inventory by tracking what is selling, what isn't selling, what to mark up or down and what to shift.

Few Mervyn's executives debate whether the $4.4 billion chain would be operating at its present strength if they had passed up the SMP system, a junior version of the MPP system that Wal-Mart uses in its 2,729 retail outlets.

Indeed, McCormick didn't even need a cost/benefit analysis for the SMP investment. "It was a strategic decision" that top management agreed was necessary to stay competitive, she says.

Mervyn's is not alone. Of the 200 large systems users who participated in the MPP/SMP survey, 6.5% have already invested in MPP, and another 2.5% plan to do so this year. Seventeen percent



have implemented SMP systems, and another 4.5% plan to make the move this year. Taken together, the SMP/MPP users represent nearly a third of the companies surveyed, while another 13% say they are evaluating SMP or MPP systems for possible implementation in the future.

The parallel and high-end SMP market accounted for $2.5 billion in sales last year, according to the Superperformance Computing Service, a Mountain View, Calif., market research firm that specializes in parallel processing. While that figure is minuscule compared with the $75 billion spent on PCs last year, SMP and MPP platforms are one of the fastest growing segments of computing, with sales increasing at a rate of 41% a year, says Michael Burwen, principal at the firm. Sales are expected to top $8.4 billion by 1998.

In many cases, the SMP/MPP users represent leaders in their fields: American Express Co. has its customer analysis system on a Thinking Machines Corp. CM-5; American Airlines and Allstate Insurance Co. have ticket-pricing and insurance processing, respectively, on IBM System 390 parallel mainframes; Ameritech Corp. operates its telephone usage tracking system on a Tandem Computers, Inc. Himalaya/NonStop SQL; Chrysler Corp. uses a Cray Research, Inc. Torus 3D for its automotive design system; Prudential Securities, Inc. uses an Intel Corp.-based Paragon for running stock trading systems; and ING Bank in Amsterdam uses an NCube 2/Oracle 7.1 system to run a customer information system for stocks and other investments.

Like Mervyn's, many medium-size and smaller businesses that are struggling to remain competitive are destined to move in a similar direction, says Christopher Willard, parallel processing analyst at IDC in Mountain View, Calif.

Although prices are coming down, massively parallel systems tend to be more expensive than SMP or uniprocessor systems. One reason is that they require high-capacity backplanes and I/O buses to allow their distributed processors and distributed memories to exchange data and synchronize updates. They also require closely coordinated disk systems and more staff expertise.

SMP machines, on the other hand, tend to have fewer processors (typically four to 16) sharing a common pool of memory, with an independent task running on each processor. A few simple commands designating processor assignments divides the workload via a job scheduler system utility.

McCormick says she thinks Mervyn's gets more for its money with SMP than it would with MPP because of the lower administrative costs: "It will be a couple of years yet before MPP is ready for prime time," she says.

But for a vigorous competitor such as Wal-Mart, its AT&T Global Information Solutions 3600 system with 476 Intel I486 microprocessors yields advantage in return for the expense. For one thing, MPP gives Wal-Mart greater scalability, which keeps performance on very large problems in line with a desired time frame. A query that might tie up an SMP system for days or an IBM mainframe for a week can run on an MPP system in minutes or hours.

"The goal of massive parallelism is faster, not cheaper," says James Gray, a visiting fellow at the University of California at Berkeley and frequent author on parallel issues.

"You also get greater granularity. You can add one or two processors at a time," says Richard Winter, president of market research firm Winter Corp. in Cambridge, Mass.

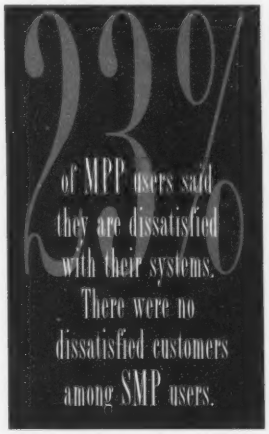
Still, the distinctions between SMP and MPP are not as clear-cut as they used to be. The major relational database vendors have "parallelyzed" their systems: Informix Software, Inc. has its Online Dynamic Server, Sybase, Inc. offers its Navigation Server, and Oracle has its System 7.1 Parallel Everything. To varying degrees, these products take database queries and break them down into parts or partition the database. Such moves let multiple SMP nodes process tasks as effectively as a similar number of MPP nodes.

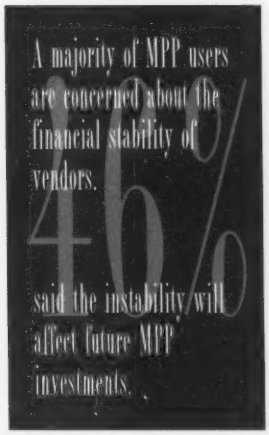
The differences will further blur with parallel designs that are now on the drawing board or in prototype. Some suppliers are reportedly building systems using a set of symmetrical multiprocessors as a node in a massively parallel machine. "Future MPP systems will be made up of SMP nodes," Burwen says. A part of an already subdivided parallel task would be fed to an SMP node, which would have multiple processors to attack the task.

NOT SO SATISFIED

Among existing users, however, the difference between SMP and MPP remains apparent in a number of ways, one being the higher level of satisfaction among SMP users. The survey found no "dissatisfied" SMP users. Among MPP users, however, 8% said they were "somewhat dissatisfied," and 15% said they were "very dissatisfied," perhaps reflecting the greater demands of parallel processing and its less perfected state.

One problem area for MPP users is support





staffing. Sixty-one percent of MPP users said the most serious problem they face is finding and/or developing skilled staffers.

Most information systems shops have no parallel experience in-house, industry observers agree. Some parallel users receive their education on the job, through trial and error. "It took us a year to get enough experience with parallel" to make effective use of the NCube/Oracle system, says Michel Hoevenaars, technology manager at ING Bank.

"You need to design the database to take advantage of parallel hardware and a parallelyzed database engine," says Mervyn's McCormick, who employs five database administrators for Mervyn's Sequent/Oracle application, compared with half an administrator for a predecessor, which delivered no decision support analysis. Parallel hardware training was done in-house.

Other IS managers look to hire some existing expertise, which lies among the parallel hardware and software suppliers or is resident in the national laboratories and universities. And there is competition for these people, Burwen says.

Horst Simon, a key figure last year in NASA's project to simulate aircraft aerodynamics via parallel processing, saw rapid advances coming from commercial parallel suppliers. In December 1994, he decided to leave his NASA contract agency, Computer Sciences Corp., to join hardware supplier Silicon Graphics, Inc. (SGI) as research market development manager. He says suppliers such as AT&T Corp., NCube, Intel and SGI are producing "the bread and butter of parallel computing, the upper midrange of systems" in demand from industrial and commercial users.

The supply of skilled people will soon rise to better meet the demand. "Every university computer science department is shifting its focus toward parallel processing," Burwen adds. But in the meantime, companies must pay a premium for parallel experience or develop it in-house.

Another major problem area for MPP is the lack of tools to write parallel applications and manage parallel systems. IBM's Load Leveler for the SP2 is one of the more sophisticated parallel processing management utilities, with the ability to match tasks to available processors by priority. But it doesn't have the intelligence to dynamically reconfigure the machine based on changing needs.

Despite setbacks and complaints, many observers see a promising future for both SMP and MPP machines. In 1988, David Audley pioneered parallel processing when he installed a parallel Intel machine at Prudential Securities in New York. The Prudential stock traders it served as a specialized, floating-point compute engine were already linked to mainframes, departmental servers and workstations.

Today, "you could put all of that computing on the same [parallel] machine," says Audley, director of investment technologies at Tiger Management Corp. in New York.

It is this vision of parallel computing that has hardware suppliers racing to develop better parallel architectures and users scrambling to gain parallel experience. What is good for specialized, database-oriented tasks today will someday be the most general-purpose machine — a machine that can be partitioned into a number of submachines that can swiftly execute the variety of tasks confronting them. •

Babcock is Computerworld's technical editor. His MCI Mail address is 575-2737.

Different Strokes

MPP and SMP applications were not created equal. According to a recent *Computerworld*/IDC survey of 200 large systems users, most purchasers of MPP systems use them for advanced applications such as complex queries. Two popular decision support applications were marketing analysis (23%) and finance/securities analysis (15%).

While 32% of SMP users said they use their systems for complex queries, they described a wider range of applications, including manufacturing processes, project management, invoice control and order processing. This reflects the mainstream use of SMP and its more general-purpose character. While data mining and decision support applications were mentioned, SMP users were more likely than their MPP brethren to identify on-line transaction processing (OLTP). Frequently mentioned OLTP applications include banking and credit transactions, reservation systems, order entry and order tracking.

Michel Hoevenaars, manager of parallel processing at ING Bank in Amsterdam, says up to 100 users query his NCube/Oracle 7.1 parallel processing system each day for analysis of stock and bond trades. Only 10 to 15 of the queries are complex, amounting to the equivalent of several typewritten pages of nested SQL commands. The system handles both simple and complex queries satisfactorily, he says.

Like Hoevenaars, many other MPP users say they expect that their parallel systems will be executing both decision support and OLTP tasks in the near future, even though these tasks have hitherto been kept separate. "Our target is 1,000 transactions per second," Hoevenaars says, acknowledging that early test runs are more in the 200 to 300 transactions per second range today.

What you don't know . . . . . . will hurt you

Take it from early adopters who have taken the plunge

BY CRAIG STEDMAN

Quantum, the first massively parallel database project tackled by American Express Co.'s Epsilon unit, took two years to complete – about one year more than expected. Epsilon had to write its own database. It had to write its own query engine and manager. It even had to write its own report writers and routines for sorting and transmitting data. Compilers were one of the few tools available off the shelf, but it took Epsilon several tries to find a tool that could handle the volume of code it was churning out.

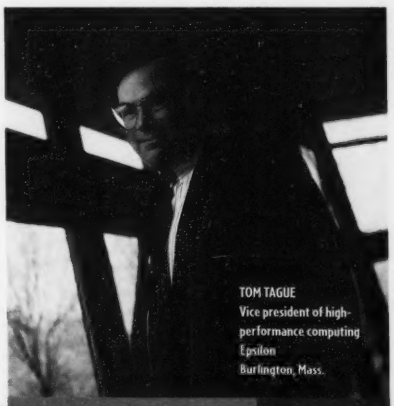
The Quantum database finally went live early last year and currently holds about 400G bytes' worth of customer information on a Thinking Machines Corp. CM-5 system. Epsilon has moved on to market its development services to other companies, and massively parallel processing (MPP) systems have evolved so they are no longer "like a rusted-out '65 Mustang with an AM radio and a big engine," says Thomas Tague, vice president of high-performance computing at Epsilon in Burlington, Mass.

But that does not mean you can drive one without knowing something about what's under the hood, Tague adds. Databases, compilers and software development tools may be more plentiful now than they were just a few years ago, "but they're nowhere near as mature as the vendors would like to have you believe," he says. "There is still some art here. It's not cookbook yet."

Other early MPP adopters at commercial shops agree that MPP is not something to rush into at this point. Even commercial-oriented MPP systems, such as the Teradata and Series 3600 models sold by AT&T Global Information Solutions, present thorny issues when it comes to getting applications to run at peak speeds, they say. And with symmetrical multiprocessing (SMP) systems widely available and gaining in performance and scalability, parallel technology is not appropriate for everyone or everything.

"It's robust and does what it promises to do, which is crunch a lot of numbers very fast," says Armando Silva, vice president of customer information at Sabre Decision Technologies, part of The Sabre Group subsidiary of AMR Corp. in Fort Worth, Texas. "But you start running into problems when you have to fetch specific information from specific tables [in a database]. The performance gains start to go away."

The Sabre Group has six Teradata systems and one 3600 running more than 25 applications, including the American Airlines frequent flyer program, passenger sales planning and analysis and decision support for the airline's cargo operations. Application coding has been relatively straightforward and impervious to the fact that the target hardware is a par-



Jay Reed

TOM TAGUE
Vice president of high-performance computing
Epsilon
Burlington, Mass.

"[MPP applications] are ready for prime time, but you have to understand the machine to get the most out of it."

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allel processor, says Silva, who managed work on a Teradata-based yield management system that Sabre developed jointly with the French National Railroad.

But tuning the applications for maximum performance is another story. "Teradata is an animal that does require a great deal of tuning," Silva says. "At some point, it becomes an art."

Fred Otteson, a senior consultant at Sabre, adds that performance can differ by orders of magnitude "based on your experience and the amount of time you have to tune."

Tague agrees that MPP databases remain "incredibly susceptible" to tuning problems. "With really careful attention to the system components, [MPP applications] are ready for prime time," he says. "But you have to understand the machine to get the most out of it."

Meanwhile, performance improvements are bringing plug-and-play SMP systems within reach of some of the applications that companies have had to put on MPP systems for reasons of scaling. Sabre is looking "on a case-by-case basis" at whether its Teradata applications should migrate to an AT&T GIS 3600 or an SMP box, Silva says. "What would have been clear-cut a few years ago as something that had to go on Teradata is not so clear anymore," he says.



John Rae

GRAHAM FYFFE
Senior director of application development
U.S. Surgical Corp.
Norwalk, Conn.

"We just didn't get the performance we needed [with MPP]. The entry cost kept getting larger and larger until we got priced out of the market."

Jumping ship

U.S. Surgical Corp., a maker of surgical devices in Norwalk, Conn., is already making the switch from an NCube MPP system to a four-processor SMP machine made by Digital Equipment Corp. When U.S. Surgical installed the NCube hardware in early 1993 to run decision support against its sales data, going parallel seemed to be its only way to get the necessary performance at a relatively low price, says Graham Fyffe, senior director of application development.

But Oracle Corp.'s parallel querying software was first delayed and then wound up needing more than the 16 NCube processors that U.S. Surgical had been told would be adequate, Fyffe says. The company upgraded to 32 processors, but even then, performance maxxed out with only five users on the system at a time. It could have gone to a 64-CPU NCube for

What happens when the vendor vanishes?

The worst nightmare for any computer user happened to American Express last year: A key vendor, Thinking Machines Corp., dropped out of the hardware business, just months after the application that was painstakingly developed for Amex's massively parallel CM-5 system went live.

"I've got a cellar full of equipment that isn't being manufactured anymore," says Thomas Tague, vice president of high-performance computing at Epsilon, which developed its Quantum customer information database to run on the CM-5.

"The bad side of this is that eventually we'll need to [switch platforms]. The good side is we got to market earlier than the competition" by using the CM-5, Tague says. Amex is putting together a contingency plan for moving off the CM-5, but it is still getting good support from the remnants of Thinking Machines, he adds. "As long as that continues, there's no reason to make changes any sooner than we need to."

After running short of funding, Thinking Machines stopped hardware development last summer and filed for Chapter 11 bankruptcy protection. It continues to service its installed base while it seeks approval for a reorganization plan that would keep it going as a downsized software vendor. Kendall Square Research Corp. in Waltham, Mass., also dropped out of the MPP hardware business last year and eventually filed for Chapter 11; it has been trying to license some of its technology to other vendors.

With Kendall having followed Thinking Machines out of the MPP game last summer, Tague says commercial users "really need to build systems that have a two- or three-year payback time" so they don't get caught by any additional vendor flameouts.

— Craig Stedman

about $1.2 million or received similar performance from the Digital SMP for $250,000, Fyffe says. It s choice was easy, and the application cutover was scheduled for March.

NCube was fair to us, and we had very few physical problems with the machine itself, Fyffe says. We just didn t get the performance we expected with Oracle. The requirements got greater and greater, and we found that the entry cost kept getting larger and larger until we got priced out of the market.

Configuring and administering the NCube/Oracle system also took more time than the firm had expected, Fyffe says. Loads would stop happening, queries wouldn t work out. The whole point of this was to have a system that didn t require any hand-holding.

Instead, U.S. Surgical s chief database administrator had to spend about 80% of his time working on the machine last year for a database that has only about 7G bytes worth of information at present. In January, U.S. Surgical decided to switch to SMP.

SMP BETTER FOR SOME

Gary Smaby, president of Smaby Group, Inc., a consulting firm in Minneapolis, says SMP is more appropriate than MPP in probably 90% of commercial installations. There s only a small handful of applications that truly can take advantage of underlying parallelism, he says. You re talking about the peak of the pyramid there.

Insurance Company of the West, based in San Diego, has been looking at both MPP and SMP architectures for a possible investment over the next year. But MPP right now looks to be too expensive for us and more machine than we could use, says Don Fields, assistant vice president of technical support services at the company. You ve got to be huge or extra large, at least.

The insurance provider also lacks the expertise to do the kind of coding that s required for that type of programming, Fields adds. You have to look at the world in a new way that may or may not be valid for business processing. In contrast, SMP looks like more of a shrink-wrapped approach, he says.

Epsilon, which is now doing both MPP and SMP development projects, uses 150G bytes as the current database size, where parallel technology becomes the obvious choice, Tague says. If you re under that range, there are a number of SMP platforms worth looking at, provided your database is not growing so fast that it will outstrip SMP s ability to scale upward, he adds.

Users with SMP experience say implementing those systems is relatively straightforward from a development standpoint.

Nobody cares about the fact that it happens to be an SMP system, says Paul Singer, computer application engineer and lead database administrator at Southern California Edison Co. s San Onofre Nuclear Generating Station in San Clemente, Calif. The plant uses four Sequent Computer Systems, Inc. Symmetry machines to track radiation doses and operations data.

There have been some implementation pains, but most of our issues have virtually nothing to do with the fact that Sequent runs multiple processors, Singer says. Getting developers with mainframe and PC LAN backgrounds to work under a single process was a challenge, as was creating a single security system. A lack of backup software is Sequent s biggest technical shortcoming, which forced the utility to hack together Unix shell scripts, he says. I'm not happy with that situation. I can t do the kinds of backups I d like to do.

Mellon Bank NA in Pittsburgh has also had mostly smooth sailing with both Sequent and Hewlett-Packard Co. SMP systems, once its developers managed to shed their mainframe skins, says Chris Foot, an assistant vice president and client/server database administrator at the bank. We had some growing pains, mostly because this was a totally new environment for us, he says. But there was nothing that ever brought any applications down for a 10-count.

TOOLS STILL LACKING

On the downside, Unix database administration tools are still in short supply, compared with what is available on the mainframe side, Foot says. We have to be a little more manual down here with the SMP systems.

SMP doesn t introduce complexity to programmers, agrees David Barrett, vice president of technology management at Invesco Funds, Inc., a mutual funds company in Denver. The toughest part of implementing SMP versions of AT&T GIS s 3600 and 3550 systems has been managing the conversion of Invesco s legacy applications running on Data General Corp. hardware. It probably would have made sense to take things in smaller slices than we did, he says.

While the use of the 3600 gives Invesco the option to go parallel, the SMP mode it is running today has more than enough power to handle the expected growth of the company s computing needs, Barrett says.

We wanted to get as scalable a platform as we possibly could, he says. But we haven t grown to the point where we re overtaxing the system as it is. ¥

Stedman is Computerworld's senior editor, Large Systems.

What to watch

Experienced MPP and SMP users say companies should consider a variety of factors when making an investment:

MPP

- Vendor viability cannot be guaranteed in an emerging market.
- Not all applications lend themselves to parallelism.
- Application tuning is a critical step.
- Payback should come within two to three years.
- Transitioning developers from the mainframe is time-consuming.
- Packaged applications are not readily available.

SMP

- Systems do not always scale in a linear fashion.
- Scalability is limited compared with that of parallel technology.
- Some tools are still immature compared with mainframes.
- Conversion from legacy applications can be difficult to manage.
- PC LAN development practices need to be changed to share resources.

If the shoe fits,

BY GARY H. ANTHES

For years, computer scientists have been saying that parallel processors will one day dominate high-end commercial computing. However, unreliability, a lack of available software and difficulty of use have generally kept the machines out of the corporate environment.

That is until now. As corporate users demand more powerful and less expensive alternatives to mainframes, hardware vendors are beginning to offer affordable parallel systems, and software vendors are rolling out a variety of parallel tools. While early adopters of parallel architectures point to daunting start-up challenges, they generally say the payoff is worth it.

The time is right for Electronic Payment Services, Inc. in Wilmington, Del. The company is phasing out its mainframe by moving applications such as billing and settlements to IBM RS/6000s and to an AT&T Global Information Solutions 16-processor System 3600. The total annual cost of the new environment will be "comfortably less than half" the cost of equivalent mainframe capacity, according to Jeff Michel, chief technology officer at Electronic Payment Services.

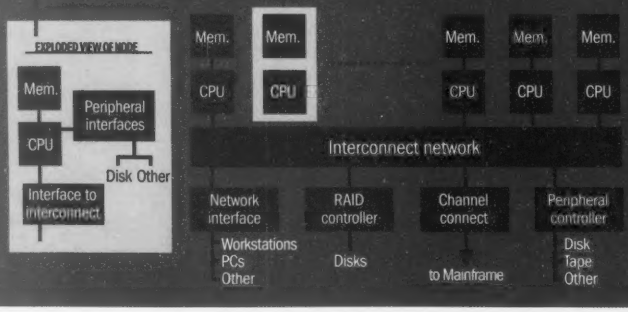
But cost savings are not the only force that brought parallel processors in the door. Electronic Payment Services handles 1.5 billion credit-card, debit-card and point-of-sale transactions per year, and it expects that volume to double in three to five years. Processing many relatively independent transactions is a natural for a parallel architecture, in which multiple streams of transactions can be directed at processors like customers at bank teller windows.

Also, the rapid growth forecast by Electronic Payment Services demands a system that can be scaled up easily and relatively cheaply. Again, this is a natural for the kind of parallel architecture that the 3600 and Electronic Payment Services' Tandem Computers, Inc. Himalaya computers employ. Michel says the 16-node 3600 machine might grow to more than 100 processors as its database grows from less than 100G bytes to more than a terabyte.

Electronic Payment Services' System 3600 and its Himalaya machines are in the class of computers known as massively parallel proces-

What's the difference?

MPP



FEATURES

- Distributed memory – non-uniform memory access time, separate address space for each processor (some systems have shared memory programming models)
- Scalability – 2 to 1,024+ processors
- Nodes may have SMP multiprocessor architectures
- Communication between processors via message passing at some level
- Operating system kernel in each node

buy it

Today's MPP and SMP machines come in a variety of shapes, sizes and prices. The challenge is choosing the model that works for you.

sors (MPP) and sometimes as scalable parallel processors, or "shared-nothing" computers. Each processor has its own local memory and operates relatively independent from the others. When necessary, the processors share data over a high-speed internal network.

While users pay an overhead penalty, or latency, when such interprocessor communications take place, they are able to scale up the systems. This often happens with nearly linear performance increases, with a user plugging in more processor/memory boards.

A different approach to parallel computing is embodied in symmetrical multiprocessing (SMP) or shared-memory processing architecture, in which all processors have local caches but share a single main memory. These machines are typically more cost-effective for small to midsize applications because the technology is more mature and the machines don't need the costly interprocessor network.

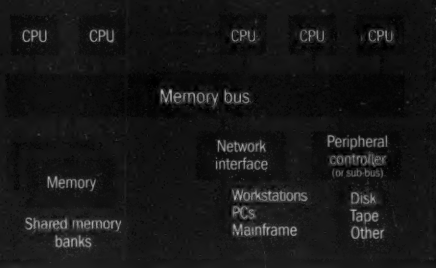
However, SMP computers do not scale up as well as their MPP cousins. With each processor you add, performance increments become smaller and smaller as the central memory or the memory-processor bus becomes a bottleneck. SMP machines may not scale cost-effectively above eight or so nodes, whereas MPP machines can easily scale to hundreds of processors.

Tandem uses both architectures – MPP in its Himalaya line and SMP in its Integrity line – but it recommends the Himalaya for very large databases. "With decision support, you start running out of real capacity in SMP between 80G and 100G bytes," says Richard Hellyer, parallel systems marketing manager.

One way to scale an SMP system is to combine two or more SMP servers in a networked cluster. Depending on configuration and application, the cluster can be made to perform like either an MPP or an SMP system. An application running on one or more processors on an SMP system can reach out and get compute cycles, memory or disk space on another box as needed.

SMP clusters exact a penalty in terms of the overhead needed to coordinate tasks and the latency in moving data from one machine to another. On the other hand, they can offer a high degree of fault tolerance because the work one system does can quickly be taken over by another if the first one fails.

SMP



- Shared memory – uniform memory access time, single physical address space
- Bus or crossbar architectures
- Scalability – 2 to 64 CPUs
- Communications between processors via memory

And the envelope please . . .

The Top 3 MPP vendors among survey respondents are:

- AT&T
- IBM
- NCube

The Top 3 SMP vendors are:

- AT&T
- HP
- Sun

Source: Computerworld/IDC

However, setting up a network of SMP computers so a given application sees the cluster as a single virtual machine is not easy, cautions Tim Ramsey, a senior associate at Booz Allen & Hamilton, Inc. in McLean, Va. Operating systems are not yet smart enough to transparently reach out to other machines without help from the application programmer, he says.

Application characteristics also affect scalability. Most applications can be "parallelized" to some degree. For example, companies can set up decision-support systems (DSS) to process multiple queries simultaneously by assigning a processor to each independent query. But most applications have some component that is inherently serial or cannot be broken into parallel streams. The higher the percentage of the total job that is inherently serial, the less advantage the user gets from adding processors.

The good news for commercial users is that common business tasks such as online transaction processing (OLTP), message processing and querying a database lend themselves to parallelization. The bad news for buyers facing a bewildering array of products and vendors is that the choice between SMP and MPP is not the only decision they must make.

For example, different objectives led Electronic Payment Services to choose Tandem MPP machines for its front-end OLTP and AT&T GIS MPP systems for its back-end data warehousing. The company saw the fault-tolerant Tandem NonStop design as key in an application where even minutes of delay in authorizing credit-card purchases would be disastrous.

On the other hand, Electronic Payment Services chose the AT&T GIS 3600 for data warehousing and decision support because the company felt it offered a more open environment. The 3600 can use any of the major relational database management systems, while the Tandem MPP machine requires Tandem's NonStop SQL RDBMS, which Michel nevertheless calls "a very good solution."

Early adopters of MPP say that while application software and development tools and utilities for parallel environments are not nearly as prevalent for MPP as in the mainframe world, database vendors and third-party developers are starting to respond to market demand.

They still have a way to go before the software is industrial strength, however. "We don't have bulletproof database management systems for seven-day, 24-hour operations," says Richard Johnson, director of the high-performance computing practice at Booz Allen. But many DSSs do not require 100% uptime, he adds.

David Audley, director of investment systems and technology at Tiger Management Corp. in New York, says Tiger chose an IBM Powerparallel SP2, in part because of its compatibility with IBM's RS/6000 line, for which much software exists. "A lot of vendors now consider the SP a target environment," he says.

The global investment firm will use the eight-processor, scalable SP2 for esoteric chores such as ferreting out correlations among complex variables like weather patterns and economic cycles.

But Tiger will also use the SP2 for more mainstream applications such as OLTP and DSS and as a high-speed port to the Internet. "Part of the attraction for us is that we will be able to truly integrate some of the front-office and back-office applications running on the same computer," Audley says.

He says Tiger will buy some off-the-shelf commercial applications for the SP2 but will have to adapt them to the parallel environment of the SP2 and Oracle Corp. RDBMS. "We do not believe that is going to be especially difficult because of the facilities that Oracle provides to take advantage of multiprocessing."

Gary Smaby, president of Smaby Group, Inc. in Minneapolis, says OLTP and DSS are relatively mature applications in parallel processing, while many others will migrate to parallel environments. "All the major vendors are going to go to scalable systems; there's no turning back. The new applications will pull through the hardware, not the reverse," he says.

Even so, buyers should look hard at their vendors before investing in processors. A number of parallel processing pioneers, such as Thinking Machines Corp. and Kendall Square Research, have gone out of business or are struggling financially (see story page 8).

However, supplier stability may be less of a problem with parallel systems offered by blue chip suppliers such as IBM, Digital Equipment Corp., Hewlett-Packard Co., Sun Microsystems, Inc. and Silicon Graphics, Inc.

"These companies are sending an important signal to the commercial world by embracing [parallel] technology as the high-performance technology of choice," Booz Allen's Johnson says.

"Parallel processing had almost a spiritual quality to it and a lot of hype," he adds. "That will all disappear. The technology will become as mainstream in the late 1990s as mainframe technology is today." •

Anthes is Computerworld's senior editor, Government and Security, in the Washington bureau.

Who's who in hardware

VENDOR	MODEL
AT&T Global Information Solutions	Teradata DBC 1012, 3600
Cambridge Parallel Processors	DAP 510C, DAP 6100
Cray Research	T3D
Fujitsu	VPP500
IBM	SP2 high-end systems, 967X parallel Query Server
Intel Scalable Systems Division	iPSC/860, Paragon
Kendall Square Computer	MPP
Meiko	CS-2
NCube	NCube 2 and 3
Parsytec	GC
Tandem Computers	Himalaya K10000, K20000
White Cross	9000 series
SMP	
AT&T GIS	3400, 3500
Compaq	ProLiant series
Cray Research	Superservers CRS640
Digital Equipment	Alpha server and Advantage cluster families
Hewlett-Packard	G70, H70, I70, T500
IBM	RS/6000 - G30, J30, R30
Pyramid	Nile series
Sequent Computer Systems	Symmetry 2000, 5000
Silicon Graphics	Onyx, Challenge, Power Challenge
Stratus	Continuum, XA/R series
Sun Microsystems	SPARC Server 1000E, SPARC Center 2000E
Tandem Computers	Integrity series

Note: MPP is defined here as a distributed memory system capable of supporting thousands of processors. SMP is defined as multiple processors sharing a common bus or switch and typically sharing a common memory. This is not an exhaustive list.

Source: *Computerworld* and International Data Corp.

Let your needs dictate strategy

BY CHRISTOPHER G. WILLARD, PH.D.

With the introduction of new parallel and high-performance technologies, the terms massively parallel processing (MPP), scalable parallel processing and symmetrical multiprocessing (SMP) have begun to lose their meaning. Much of the confusion arises from attempts to define markets in terms of technology rather than in terms of user requirements and budgets. This is obviously of little help to companies with specific needs, limited funds and little time to entertain all the vendors that come through the door.

Overall, there are two distinct end-user markets for parallel systems: high-end market expansion and midrange technology transfer. Figuring out which market you are in is the first step toward deciding what type of system is appropriate for your company's needs.

High-end market expansion

For a growing set of high-performance applications, parallel computers are proving to be the most effective and, in some cases, the only option for meeting certain requirements. The majority of these applications fall into what I call the commercial Strategic Business Applications (SBA) category. SBA capabilities are based on managing and querying very large or unstructured databases and performing complex analyses on large sets of data. Specific SBA applications include advanced decision support (cross-company database analysis); real-time management (updating pricing, merchandising, financial control, etc.); process optimization (airline crew scheduling and flight path planning); insurance demographic analysis (anticipating demographic trends and rate setting); data mining and unstructured databases (querying and reclaiming unindexable data); and buying-pattern analysis (ultimate catalog, store layout design and individual customer preferences).

The SBA market will behave like a traditional supercomputing or high-performance market in which users address previously unsolved problems that, if solved, would give them a competitive edge. As such, these users are willing to invest in new technology.

If this category defines your company's needs, you should focus your search on traditional parallel computers designed to use a majority of the processors to solve one problem. While you don't need a system with distributed memory, you should choose a solution that is scalable to at least 64 processors.

Midrange technology transfer

In the midrange and mainframe markets, parallel computers are competing with traditional architectures for existing applications and customer bases. In these markets, parallel computers provide functionality similar to that found in traditional architectures, but they are positioned to offer greater scalability and an improved price/performance trade-off.

Unlike the SBA market, parallel technologies applied to the midrange technology transfer market do not open brand-new opportunities or dramatically change user applications. However, the entire panoply of parallel and high-performance technologies will come into play as users and vendors reexamine their approaches to managing client/server networks, managing computer capacity and costs and maximizing the price/performance trade-off.

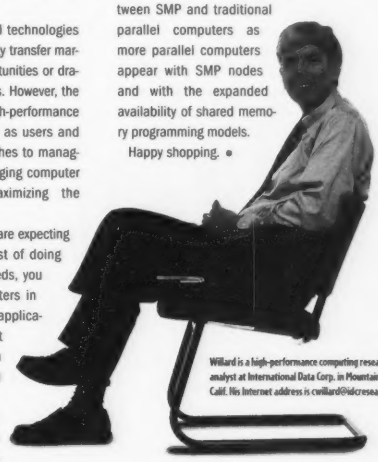
Users at this end of the market are expecting new technology to lower the cost of doing business. If this defines your needs, you should evaluate parallel computers in terms of memory architectures, applications availability, vendor support and system scalability. In addition to considering traditional parallel computers with distributed memory that can scale up to at least 64 processors, you should also consider shared memory solutions that scale up to less than 64 processors but can be clustered.

Both of the markets outlined above will be very dynamic for the next several years as an all-out, no-holds-barred competition develops between distributed and shared-memory architectures. If you have some time before making the MPP/SMP investment decision, you should keep tabs on a few key market trends.

Watch for the following:

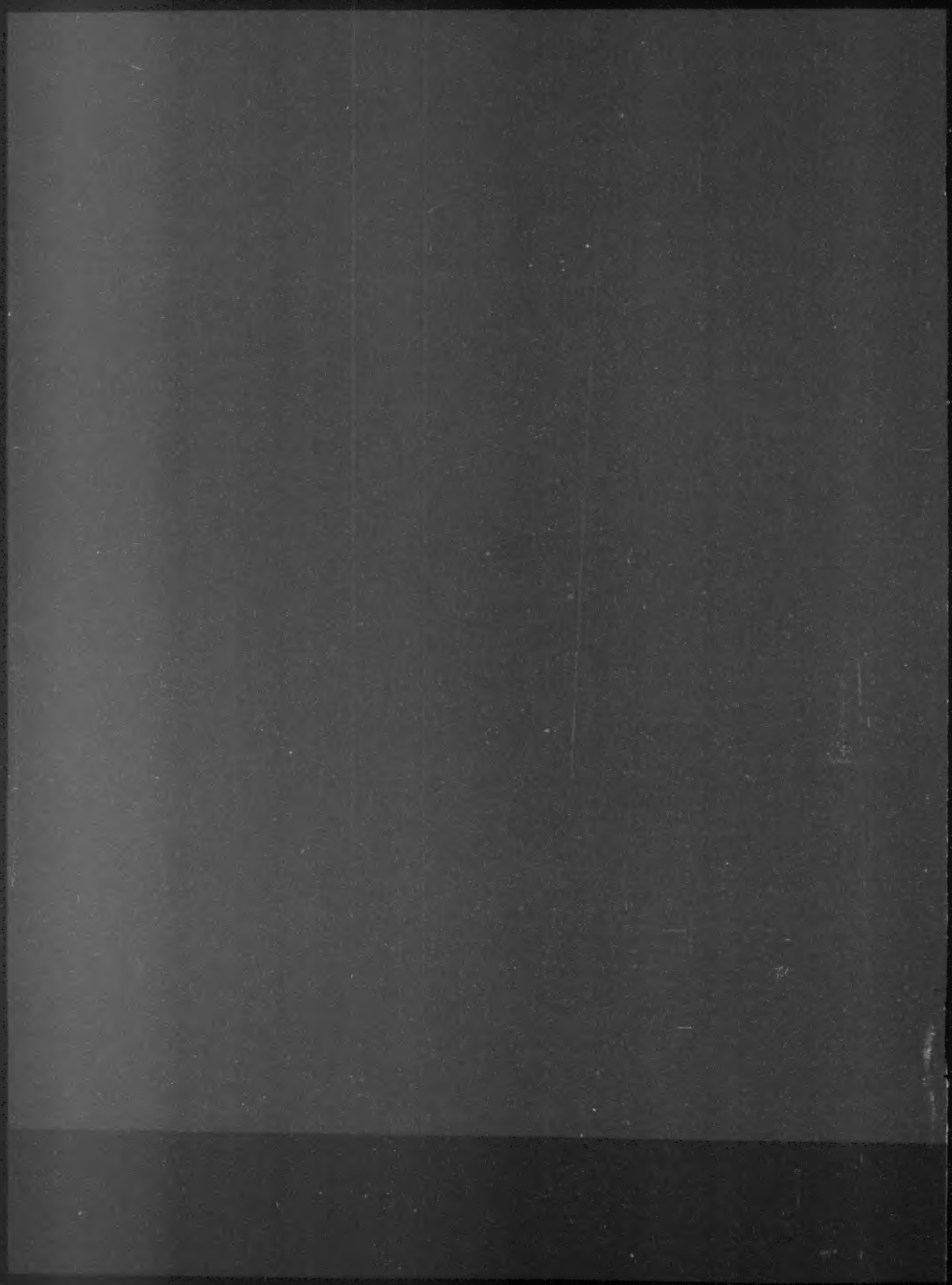
- Shared memory systems that attack high-end markets based on more powerful processors and increasing processor count.
- SMP vendors that offer a variety of clustered solutions to keep competitors out of their accounts and to muddy the already dark waters of parallel definitions.
- The introduction of more powerful processors to slow the rate of processor growth in MPP systems.
- Blurring of the distinction between SMP and traditional parallel computers as more parallel computers appear with SMP nodes and with the expanded availability of shared memory programming models.

Happy shopping. •



Eric Millette

Willard is a high-performance computing research analyst at International Data Corp. in Mountain View, Calif. His Internet address is cwillard@idcresearch.com.



Cryptography suit seeks definition

By Peter Cassidy

A lawsuit filed late last month could have far-reaching effects on information systems managers' choice of security measures and on the electronic deployment of software.

Daniel J. Bernstein, a University of California graduate student in mathematics, filed suit against the U.S. Department of State in the Northern District of California on Feb. 22, contesting the constitutionality of the Arms Export Act and the manner in which it is administered.

The Arms Export Act controls the use of certain cryptography techniques that are considered "munitions" under old laws. The techniques covered under the Arms Export Act are thus restricted from being put on to electronic media, such as the Internet, and from being sent overseas.

> People "are frightened and confused" by the laws as they currently stand.
>
> — William Hugh Murray, Deloitte & Touche

Rights violation

With litigation subsidies from the public advocacy group the Electronic Frontier Foundation, Bernstein contested the export laws as a prior restraint on speech in violation of the First Amendment. The suit also contends that because it is a constitutional issue, Bernstein has the right to be heard in court rather than through the usual channel for export issues, which is the State Department's administrative appeals system.

Cindy Cohn, Bernstein's attorney, said in an interview from San Mateo, Calif., that this case poses questions pertinent to computer systems managers because "the government has defined anything you put on the Internet as export." If, for example, a user company put a cryptographic algorithm on the Internet, that company would be in violation, she said.

Industry analysts and security experts view the suit as an advancement of the debate about the rationale for continued enforcement of Cold War era export laws that control the movement of cryptographic products.

Donn Parker, senior management consultant at SRI, Inc. in Menlo Park, Calif., said export control laws complicate IS managers' choice and deployment of products, which often have a "built-in encryption-related function." This means users could be inadvertently in violation should they move these products offshore.

Currently, IS managers at international companies have to figure out the laws, which classify as munitions cryptography beyond a certain level of strength, and apply for licenses from government regulatory agencies to use the algorithms.

"It's a little bit naive to believe that export controls are making much of a dent in preventing people who aren't supposed to be getting encryption software from getting at it.... The problem is people playing by the rules are being penalized," Parker said.

Also, the world in which export control laws were developed was a different place from today's business environment. Today, the orderly conduct of retail banking, cable TV and Lotus Development Corp.'s Notes and Novell, Inc.'s NetWare — both of which contain embedded cryptographic systems — all depend on powerful cryptography.

William Hugh Murray, executive consultant at Deloitte & Touche, said people "are frightened and confused" by the laws as they currently stand.

"The conservative position today is that one must purchase all software in the country of intended use," Murray said. "You work in France, you buy and use in France. That way you're not an importer or exporter."

Keeping up to date

Both Lotus in Cambridge, Mass., and Netscape Communications in Mountain View, Calif., are using RC4, an encryption algorithm designed by RSA Data Security, Inc. in Redwood City, Calif. The problem is that both vendors intentionally toned down the power of the algorithm just to make sure they did not run afoul of the export laws.

That brings up a long-term issue. Because of the price/performance ratio of the computer industry, "something adequate for security protection in 1995 will be half as adequate when computer power doubles again," said Tom Lemberg, Lotus vice president general counsel.

David Post, visiting professor of law at Georgetown University in Washington, said the current rules are out of sync with the times. Instantaneous communication means cryptographic software tools can be copied and "be on someone's desk in Singapore, Hong Kong or Frankfurt the next day."

Cassidy is a freelance writer in Dorchester, Mass.

Lack of standards



The recently filed lawsuit comes at a tense moment in the cryptographic disciplines.

The 1970s vintage Data Encryption Standard (DES) was last recertified in 1993. At the time, the Commerce Department's National Institute of Standards and Technologies (NIST) said it did not foresee recertifying it again. Academic research papers are circulating with evidence that the DES, in theory, can be broken with current technology, making bankers and traders anxious for a more powerful successor.

The only new standard on the horizon is the National Security Agency's Clipper chip and related products. Clipper incorporates a suite of cryptographic tools designed with an extra set of keys to allow authorized government surveillance — a concept almost universally condemned in the U.S. by everyone outside of government.

The state of the art in cryptography are so-called public-key cryptographic schemes, which can be used to scramble data and validate the identity of the sender. It is, in effect, an electronic signature required to authenticate electronic transactions. This is the technology that the banking community would prefer to implement, according to Kawika Daguio, federal representative at the American Bankers Association.

— Peter Cassidy

Maine

CONTINUED FROM PAGE 61

point, but we need the NetWare Directory Services capabilities in 4.1. We need a global management system," he explained. "Trying to manage multiple servers with 3.12 is just too cumbersome and tedious."

One reason for that is the "incredibly complex log-in scripts" that exist in NetWare 3.12. This means that each time a group of users on one file server needs to access applications or databases residing on another file server, Drumm must do separate setup, configuration and monitoring for each individual group.

Drumm, the first Certified NetWare Engineer in Maine, also had high praise for the reliability and stability of NetWare 3.12. "In five years of use, we never once had to call Novell for technical support," he said.

On the hardware side, MMC will migrate to Cabletron's high-speed MMAC Plus switching hubs, which will eventually be linked to an Asynchronous Transfer Mode backbone. The medical facility also plans to implement Cabletron's Spectrum network management system to monitor the entire setup, he added.

Doctor's orders

For Dr. Nathaniel James, the benefits of Maine Medical Center's networks are very clear: "They let me spend more time being a doctor."

Time is a precious commodity for James, who wears several hats. He is the director of ambulatory medicine for MMC's outpatient department and also runs the medical facility's International Clinic.

His group treats more than 10,000 outpatients annually. The 5-year-old International Clinic initiative provides affordable health care to about 1,200 patients who came to the area primarily from Southeast Asia and Afghanistan.

The network also runs several software packages that let James search medical literature on CD-ROM to research diseases, such as malaria, that may affect Pacific Rim immigrants, he said.

James especially likes the idea of having networked PCs in the examination rooms to instantly display patients' medical problems on-screen.

"This lets me review medication lists and check off which prescriptions we want to refill. The networks are a great organizational tool. I simply review the patients' history to see what action I've already taken and what I haven't done. And any changes [to the chart] are automatically updated across the network," James said. "And best of all, no more writer's cramp."

"The bottom line is, I use the networks to do just about everything but set broken bones," James said.

— Laura DiDio

Artisoft, Inc. has announced the LANtastic Utility Pack, a software bundle for LANtastic 5.0 and 6.0 networks.

According to the Tucson, Ariz., firm, the product includes Artisoft's LANtastic Management Services software, ArtiSave Backup software, Articom modem-sharing software and Microcom, Inc.'s Carbon Copy communications software.

The backup software is for minicartridge tape drives and backs up any server on the network.

The LANtastic Utility Pack costs $349.

▶ *Artisoft*
(602) 670-7101

Product short

Network-1 Software and Technology, Inc. has announced Net1-Firewall, an Internet firewall system that provides framing source, destination and protocol field filters. Cost: $11,900. Network-1 Software and Technology, New York, N.Y. (212) 293-3068.

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Not so fast

Users of SAP's R/3 client/server tools say some installations not as quick as vendor claims

By Rosemary Cafasso

As SAP AG puts the spotlight on quick, six-month R/3 installations, many users claim it takes at least twice as long to implement this high-end client/server software.

The Walldorf, Germany-based vendor recently noted that not only had 600 of its 2,400 worldwide customers gone live with R/3, but that several North American sites had pulled this off in less than six months.

Several users said that while SAP may be correct in citing some very straightforward implementations that took just a few months, it is far more common for R/3 projects to take a year or longer. Global rollouts can span several years, they added.

The Seattle Times could be a record breaker when it comes to R/3 implementations. The daily newspaper installed a prepackaged version of the client/server software in 88 days.

SAP pointed to Autodesk, Inc. in San Rafael, Calif., as an example of a company that took "six months or less" to implement the software. An information systems executive at Autodesk said that it did take six months to get several R/3 modules up and running, but the company also completed a three-month prototyping effort before it began the installation phase. Plus, he estimated it will take three years for Autodesk to complete a worldwide rollout of R/3.

An official at SAP recently said the company's claims of quick installations are for competitive positioning and are not intended to suggest that all R/3 projects are quick-and-dirty implementations.

Several users agreed, noting that an R/3 installation cannot be compared to a typically straightforward implementation such as a client/server financial module.

"I would say very complex and intense," said Bob Washa, a technical manager in the corporate information systems group at Chevron Corp. in San Ramon, Calif., when asked to describe the company's R/3 implementation.

R/3 is a comprehensive and integrated set of applications with an enormous number of options. The package also has its own fourth-generation language. Companies frequently select the client/server software when tackling a re-engineering effort, which makes R/3 projects all the more complex.

Eastman Chemical Co. in Kingsport, Tenn., for example, completed an R/3 job in just six months, but the job involved only the human resources module that supports strictly international employees, said Jack Spurgeon, director of the systems and computer services division at Eastman Chemical.

Meanwhile, Pacific Gas & Electric Co. in San Francisco is planning to spend 18 months to implement most of the R/3 modules for a corporatewide rollout.

"If we were starting from scratch with a brand-new company, it wouldn't take that long," Long said. "But our issue is that we are an old company, and we have changes to make. We have 20,000 employees and so just training and educating people is a big, daunting challenge."

Lloyd Mitchell, SAP's director of support services for the Northeast region, said some R/3 projects can be done in just months.

"If you want to implement in six months, sure it can be done. But just be aware of what it means," Mitchell said. "It comes ready to go. Whether the processes exactly match what a given company wants to do is another issue."

Industry observers agreed that SAP's highlighting of quick turnaround projects is mainly an attempt to whack competitors that are tagging R/3 as overly difficult to install.

"There have been all these rumors and vapors about people who are finding it much more expensive to implement than they originally understood," said Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston. "SAP is trying to counter that."

The upside to R/3, users said, is that additional phases of R/3 projects go more quickly once the initial work is done.

Washa, for example, said installations at additional Chevron business units are going in at a quicker pace now that the full-year effort at the first site has been completed. "We leveraged that year of experience, and we are now able to do our pipeline company in about six months," he said.

SAP stats

While SAP talks up quick R/3 jobs, some users tell a different story

COMPANY	R/3 COMPONENTS	SCHEDULE
Pacific Gas & Electric	Most modules	18 months/corporatewide installation
Chevron	Financials	12 months/initial implementation
Steelcase	General ledger, financial reporting	12 months/initial implementation
Eastman Chemical	Human resources	6 months

Group pushes single log-on idea as security antidote

By Gary H. Anthes

As computing environments become more heterogeneous, passwords and log-on identifiers are proliferating. And that is causing big-time security headaches for users.

It is also diminishing productivity by forcing users to log on to different systems multiple times a day and adding administrative burdens on systems administrators.

The solution, according to the Open User Recommended Solutions (OURS) forum in New York, is "single sign-on," one of the hottest concepts today in computer security. The OURS Data Security Task Force recently outlined its recommendations in a report, "Single Sign-On Project Report of Findings and Recommendations."

"Single sign-on" does not necessarily mean that users have just one password and one user identification for all the systems, networks and applications in the firm. It does mean that the number of IDs should be small enough that users do not have to write them down in insecure places to keep track of them.



ELLEN PROCHNIK

"The more complex the environment, and the more we move to client/server, the greater the single sign-on issue becomes because of the variety of systems you have to touch," said Emil D'Angelo, a vice president at Marsh & McLennan Cos. in New York.

D'Angelo helped found the OURS Data Security Task Force in 1992. At a kick-off meeting of the user/vendor group, "it was almost a no-brainer that single sign-on would become the predominant issue," he said. "The people in the room were security folks, but, for a change, this was coming from the user saying, 'Help me find a solution.'"

According to OURS member John Worthen, president of Mergent International, Inc. in Rocky Hill, Conn., it is not unusual for a person in a large corporation to have 10 to 30 passwords. "You sign on to your PC, sign on to the network, sign on to your E-mail system, the mainframe, the midrange system, the database systems," he said. "It's cascading. So what do people d ? They get careless. They write down their user IDs and passwords and leave them lying around."

The key item in the OURS report is an evaluation matrix, or checklist, that helps users evaluate their needs and compare them with commercial products. It specifies 48 possible requirements for each of four platform types — client, server, host and database. For example, it asks whether password expiration is supported, whether unsuccessful sign-on attempts are supported and so forth.

Worthen said the summary report with the evaluation matrix is free, even to those who do not belong to OURS. He said many companies are moving toward single sign-on but that very few have broadly implemented the concept.

Marsh & McLennan will bring in some kind of single sign-on technology, D'Angelo said. "We'll use the [evaluation matrix] as a baseline to say, 'Here is what's going on in the industry, and here are our requirements.' As we look at products, this should be the measuring stick."

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Mainframes

Small shops object of IBM's desire

By Craig Stedman

Luther Perry, information services director for the county of Santa Cruz, Calif., was having to make do with an IBM 3090 Model 200S that he had bought used. But, thanks to an IBM program for just his kind of shop, in January the county installed a spanking new four-processor R41 and a pair of IBM's equally new Ramac disk arrays.

Perry is among the smaller customers who are once again finding themselves the objects of IBM's attentions. These are typically users with old 3090s and 4381s — "back-level shops" in big iron parlance. Unable to foot the bill for a shiny but expensive ES/9000 — the most advanced of the traditional bipolar mainframes — these users bypassed IBM in recent years, taking the route of buying used machines.

"The cost of the [new] bipolar stuff was getting over our heads," Perry said.

But when it came time to upgrade from the 40-MIPS 200S to a 50-MIPS system, IBM's shipment of the CMOS-based 9672 R series changed the picture.

Perry said it is too soon to give the R41 a passing grade on reliability because the county is using the machine as part of an early shipment program with IBM's VM/VSE operating system. Some applications are running faster on the new hardware, while others are slower than they were on the 3090, he added.

However, the ability to roll brand-new technology into his computer room for a change was "quite welcome news" from both cost and floor space perspectives, Perry said.

ON SITE

County of Santa Cruz
Santa Cruz, Calif.

Goal: To increase mainframe processing power by 25% while reducing maintenance and environmental costs as well as floor-space requirements.

Strategy: Eschewing the used market, the county installed one of IBM's new CMOS-based mainframes in January along with its Ramac disk array.

Results: Maintenance fees and energy costs are fractions of their former selves, and a space crunch in the county's computer room has been eliminated.

Perry also looked at simply moving up the used 3090 ladder, and the R41 offered a savings of just "a few percent" on a total cost of ownership projection, he said. At selling prices of $50,000 or so, 3090 hardware "is essentially free," he noted. In contrast, Santa Cruz County paid roughly $1 million for the new technology.

However, the R41 makes up the difference on maintenance and environmental costs, which are just fractions of their former selves because of the use of CMOS and air cooling (see box at right). "When you put those two together, the system pays for itself," Perry said. "That's how we were able to afford it."

And the savings should get even better with time, he added. The county plans to upgrade during the next five years to a 100-MIPS system, which is expected to have an annual maintenance tab of about $30,000, he said. On the other hand, a 100-MIPS 3090 Model 600S fetches $200,000 a year for maintenance.

On the environmental side, the county's air conditioning and electrical systems were nearing capacity with the 200S, according to Perry. In addition, the county government has strict environmental guidelines for industry to follow, and the R41 gave it a chance to set an example, he said.

Floored by acquisition

Another key benefit was floor space. The Santa Cruz computer room, which measures only 35 feet by 35 feet, was cramped with the water-cooled 3090 and IBM's 3390 disk subsystems in there. Printer forms could not be stored next to the printers, and pieces of equipment had to be moved out of the way to do regular service work, Perry said.

Things are now very different. The R41 chews up just one-tenth of the 3090's floor space, and the two 90G-byte Ramac arrays require only one-sixth of what the 3390s took up, Perry said. Roughly a third of the computer room stands empty, bearing only the old outline of the 3090 frame.

Until the advent of the 9672 R, customers such as Santa Cruz County received scant attention from IBM, according to John Young, director of enterprise systems planning at The Clipper Group, Inc., a management consulting and market research firm in Wellesley, Mass.

"There wasn't a lot of sales time devoted to the customer sitting down at the low end of the traditional product line," Young said. "IBM's prices were too high, and its technology was too cumbersome. But if IBM wasn't going to be eaten away at the bottom, they had to do something."



The switch to IBM's CMOS-based mainframe technology has yielded the following savings for the county of Santa Cruz:

- Monthly hardware maintenance costs reduced from more than $8,000 to about $1,000
- Energy consumption reduced by roughly 90%
- Floor-space requirement reduced to one-tenth of previous amount

Dave Peterson

Open systems realities

Remember the open systems hysteria that started a few years ago? Open systems was a social movement — maybe even a revolutionary one. Users would rise up and throw off their vendor-supplied shackles. Standards committees would develop — in a spirit of shared democracy and open participation — technical standards that would bring peace and order to our lives. Vendors would be driven to their knees and made to compete only on price, and, not incidentally, the evil powers that IBM (among others) had over our lives would be destroyed forever. Users would rule!

But the fever is gone. The open systems issue is fast disappearing, as are the magazines that specialized in it. With the exception of a few minor vendors that don't seem to have gotten the message, open systems has faded from advertising copy as well. What happened?

The short answer, of course, is that open systems was a buzzword, and buzzwords have short half-lives. So "AI" is followed by "CASE" followed by "open systems" followed by "client/server" followed by "object-oriented" followed by who knows what.

History lesson

The long answer is more instructive. Unlike artificial intelligence, open systems has, in fact, become a way of life for all of us. It just didn't happen the way the zealots thought it would.

Rather, what happened was this: First, the standards movement failed to deliver on its promises. It dithered and debated and argued and destroyed entire forests in the process, but little came of it. Remember Posix? Seen any Posix-compliant applications lately?

Second, many standards became irrelevant. A standardized mark-up language for mainframe text processing is less than useful in a world of PC-based text processing where any major word processing package can import to and export from any other.

Third, the vendors soon realized that openness as defined by the openness bigots was a going-out-of-business scenario. If every product looks identical, no vendor has anything unique to sell. This is called product differentiation, and no vendor is going to give it up. So the dream of being able to move your AIX operating system to faster, better HP hardware (or the other way around) never happened because the vendors didn't want it to happen.

Today in the Unix world, the theme has moved from standards to competitiveness. "Yes. We're open and standard, but our Unix is better than our competitor's Unix because we have neat stuff (for example, proprietary added value) that our competitors don't have."

Product differentiation also affected vendor investments. Vendors decided that spending scarce development dollars on new and exciting technologies that might provide a competitive edge was much wiser than spending those dollars on arbitrary standards that only made them look like everybody else.

Note that I said "arbitrary." Vendors clearly respond to market realities. SPEC 1170 is a good example of where differences in system interfaces were not giving Unix vendors a competitive advantage, so vendors got together and fixed it with COSE.

Fourth, while all this standards activity was going on, IS shops weren't waiting because they had businesses to run. Being extremely practical folks, they were picking and choosing products from the marketplace that fixed today's problems. And the solutions that they picked were, in large part, the de facto standards that were already popular in the marketplace. So they used TCP/IP, SNA, Ethernet, Token Ring — whatever worked. Where coexistence was required (Token Ring and Ethernet), solutions quickly appeared that allowed mixing and matching.

And finally, customers discovered there was a huge cost associated with building information systems from hundreds of vendors' parts, all selected only on the basis of cost. In practice, customers want a short vendor list built on experience and enduring vendor/customer relationships. They want applications that are popular and have a large installed base. They want systems that have low cost of ownership — not just a low purchase price. And they want to manage multisystem networks as simply and easily as possible.

Changing face

Will the real open systems movement continue? Absolutely. There's no doubt that we live in a heterogeneous, multivendor world. That won't change. And standards — the useful ones — will continue to be important.

But the success of products, standardized or otherwise, will be driven by the marketplace, not by a committee. Vendors will continue to slug it out in the marketplace. And products will succeed not because they're standard, but because they're useful and cost-effective and because they provide customers with their own competitive edge.

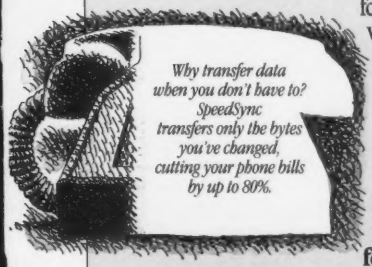
Peterson is a consultant at Midrange Open Business Strategies, Inc. in Rochester, Minn.

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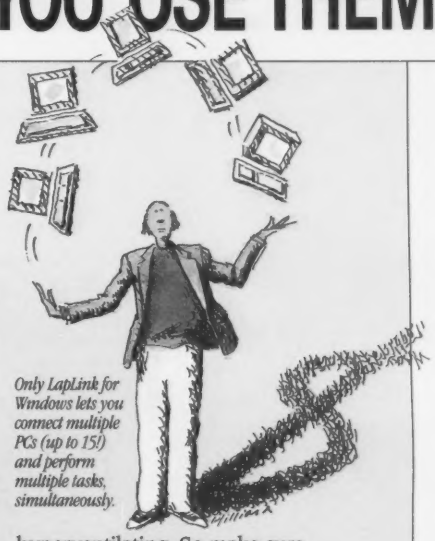
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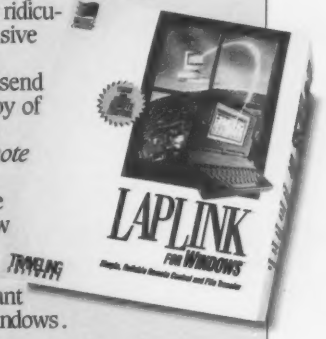
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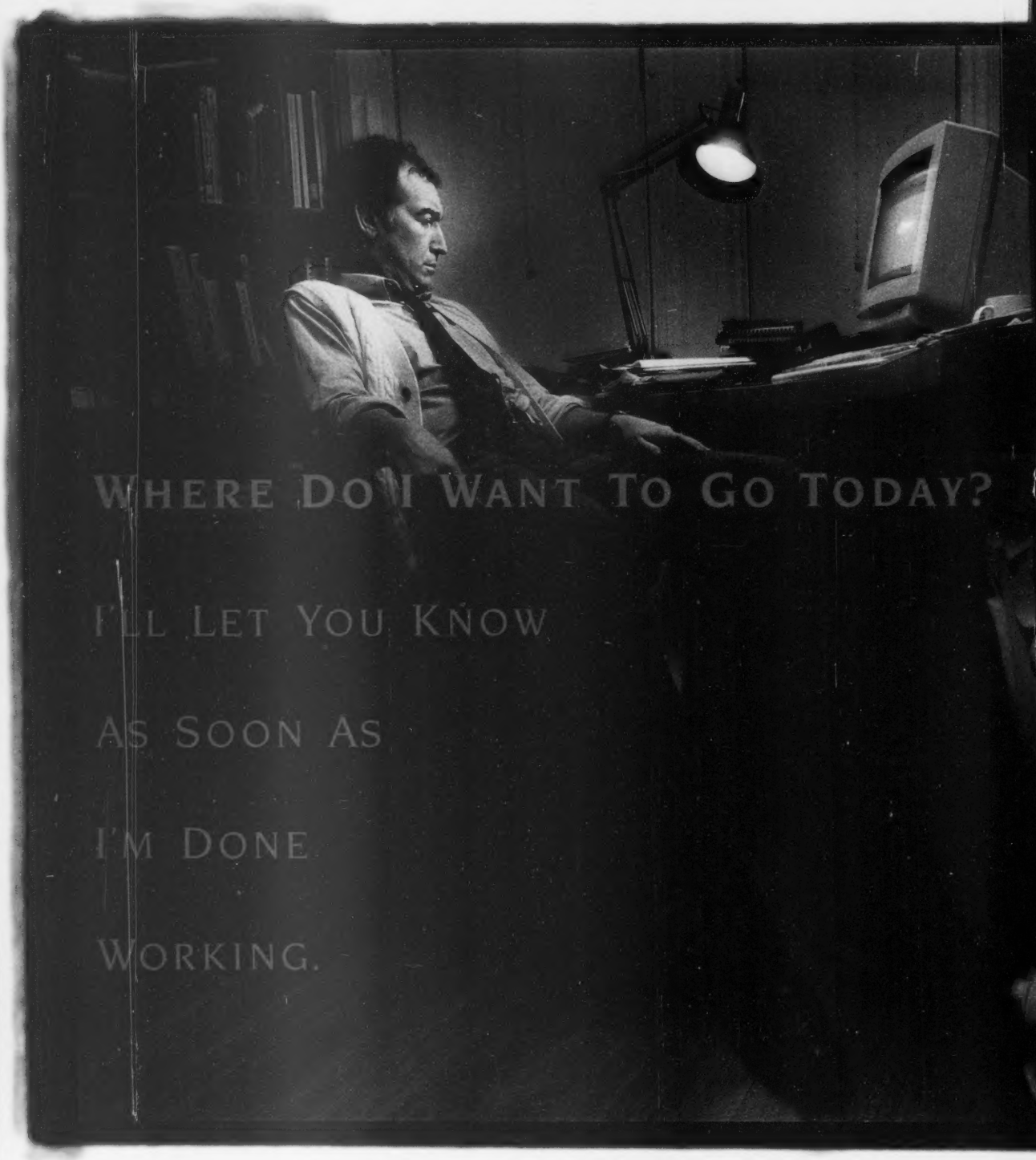
"LapLink for Windows 6.0 is seriously good stuff. Recommended."
BYTE Magazine, Jan. '95

"If you use more than one computer, you need LapLink for Windows."
PC/Computing, Nov. '94

"Installation is simple and the connections are easy to set up."
Windows Magazine, Dec. '94

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Risk mounts

CONTINUED FROM COVER 1



ent/server, where people are literally ordering peripheral backup equipment out of catalogs and taking a Tinkertoy approach," said Kenneth Brill, president of ComputerSite Engineering, Inc. in Santa Fe, N.M., and founder of the Uninterruptible Uptime Users Group.

A minority of savvy organizations have taken action by bringing their primary servers back under glass house protection. But relatively few firms have grasped the importance of using available technologies such as disk mirroring, electronic vaulting and network archiving, all of which are designed to recover mission-critical data immediately following a disaster.

And even the best-prepared organizations have found that long-range planning sometimes is not enough. For example, in the hours before Hurricane Andrew ripped through south Florida in late 1992, the University of Miami continuously sent electronic-mail warnings to its end users to back up their data and log off the networks well in advance of the storm.

However, many business and academic users failed to heed the warnings, according to M. Lewis Temares, vice president of information resources at the Coral Gables, Fla., institution. The university's information systems unit charges departments to connect to the Ungermann-Bass, Inc. backbone network that provided the network archiving during Hurricane Andrew. Some units, trying to skim costs, did not back up their data and were left wind-blown.

Even though the school has since implemented a disaster-recovery plan for every department on campus, Temares is not optimistic. "I will probably have a worse time getting the data back after the next disaster because there are more phantom networks out there than we know about," Temares said.

It'll cost ya

The financial impact on businesses when computers and networks go down

Industry	Hourly financial impact	Average hourly financial impact
Brokerage (retail)	$5.6 million – $7.3 million; range due to market conditions	$6.45M
Credit card sales authorizations	$2.2 million – $3.1 million; range due to seasonal shopping	$2.6M
Airline reservations	$67,000 – $112,000; range due to peak travel/promotion months	$89,500
Package shipping service requests	$24,500 – $32,000; range due to peak shipping times	$28,250

Source: Contingency Planning Research, Inc., White Plains, N.Y.

A big part of the client/server contingency planning conundrum can be tied to an uneducated end-user community, but there are tools designed to guide the inexperienced. For example, Palindrome Corp. in Naperville, Ill., markets a program called Prepare 2.0, a $995 Windows-based recovery package geared toward departmental, remote-office and network management personnel.



Source: Dataquest Worldwide Services, Westboro, Mass.

An important part of distributed disaster prevention is the cost rationale: How much is a company willing to spend to back up its data? And how quickly does mission-critical data have to be restored?

Ryder System, Inc. is taking a pragmatic approach to such issues.

The Miami-based transportation and logistics firm is testing an in-house application called SAM, or Simplified Asset Management. The Gupta Corp. database application, which is in the pilot phase now and should enter full production in September, will enable more than 900 Ryder salespersons worldwide to keep track of customer inventories using their Compaq Computer Corp. 486XE PCs.

Contingency contract

Under the $10 million-plus project, Ryder's Compaq PCs, Compaq servers and IBM AS/400 midrange machines will be connected to one another over RyderLINC, a TCP/IP frame-relay wide-area network. The WAN is based on MCI Communications Corp.'s HyperStream technologies.

The asset management data will be backed up through reroutable Cabletron Systems, Inc. hubs and MCI networks. And if a fire destroys one of the 80 district offices where SAM will be running, Unisys Corp. is under contract to replace the firm's Compaq PCs and servers within a 24-hour period, according to Steve Goodson, Ryder's group manager of information systems controls.

Ryder also intends to back up the SAM network data each night using Cheyenne Software, Inc.'s ArcServe network archiving software. At this point, Ryder has accepted a 24-hour window of exposure to its SAM data.

"Ryder doesn't do electronic funds transfer, and we're not highly regulated so we don't need to put steel doors on grass huts," Goodson said. "We do give security due attention, but the loss of a day wouldn't impair our customer service or our revenue stream."

Vendor-based hot sites are yet another effective distributed disaster-recovery mechanism. Recently, the list has expanded beyond traditional hot-site vendors such as Comdisco Disaster Recovery Services, IBM and Sungard Recovery Services, Inc. For example, Exchange Resources, Inc., a Minneapolis-based hot-site vendor, has four U.S. facilities and a client base that includes American Express Services Co. and J. P. Morgan & Co.

Comdisco and other hot-site vendors have also stepped up their efforts. When The Charles Schwab Corp.'s Rolm telephone switch was taken out by a leaky backup air conditioning unit in January, for example, the brokerage transferred 100 electronic services delivery staffers from its San Francisco office to a nearby Comdisco distributed work-area facility.

Safe and secure

If the mainframe is dead, somebody forgot to inform the folks at United Parcel Service, Inc.

The Atlanta-based transportation and logistics provider is gearing up to open a $55 million data center in July that may well redefine disaster prevention. The facility was built to help UPS increase its mainframe capacity and back up its other data center in Mahwah, N.J., according to David Sjogren, a facilities manager at the Mahwah data center.

The UPS building in Atlanta has been constructed to withstand 200 mile-per-hour winds and meets Zone 2 seismic requirements. By contrast, California is a Zone 4, meaning there is a higher probability of an earthquake.

The facility, which can handle 22T bytes of direct-access storage device and 6,000 MIPS of mainframe computing power, was built with dual power paths. In other words, it is split into two physically separate plants. In the event of a power outage, redundant uninterruptible power supplies back up each mainframe before gas and diesel oil power kick in.

Water-cooled mainframes will also have dual piping, so that should a water pipe rupture, a second cooling source is immediately available to the mainframe.

And should there be any problems with city-supplied water, a 700,000-gallon chilled water tank is on standby in addition to well-water sources.

Plus, there are two smoke detection systems on hand — one of which is so ultra-sensitive it will activate "if you strike a match across a matchbook cover," Sjogren said. — *Thomas Hoffman*

Briefs

Amdahl to be Cray reseller

Amdahl Corp. in Sunnyvale, Calif., said it will resell **Cray Research, Inc.**'s CS6400 SPARC-based Unix server as the SPARCsummit 6400E Enterprise Server running Sun Microsystems, Inc.'s Solaris operating system.

Digital, Tivoli to team

Digital Equipment Corp. and **Tivoli Systems, Inc.** announced they are working jointly to port the Tivoli Management Environment (TME) suite of systems management applications to Digital's Alpha systems running the Digital OSF/1 operating system. TME for Alpha systems is expected to ship in May.

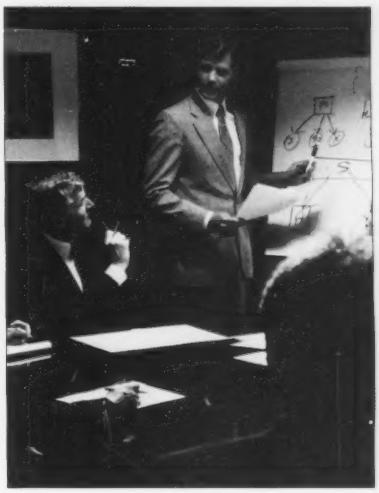
Salomon's blunder

A story that appeared in Feb. 28's *The New York Times* reported that **Salomon, Inc.**'s first-ever annual loss was heightened by a computer glitch that "failed to distinguish between interest income and principal gains and losses when the firm redeemed foreign securities." However, a spokesman for the New York-based brokerage firm, which posted a $399 million 1994 loss, said the bookkeeping blunder was caused by a human — not mechanical — error.

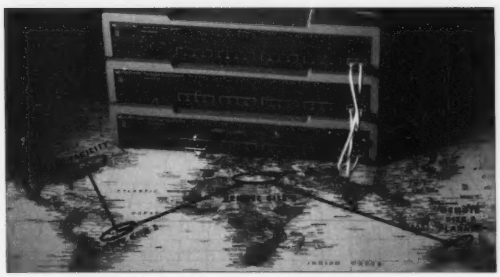
AT&T GIS a partner

AT&T Global Information Solutions and **Treasury Services Corp.** have entered into a marketing and development agreement designed to enhance Treasury Services' Evaluation and Reporting system for AT&T's massively parallel processing platforms.

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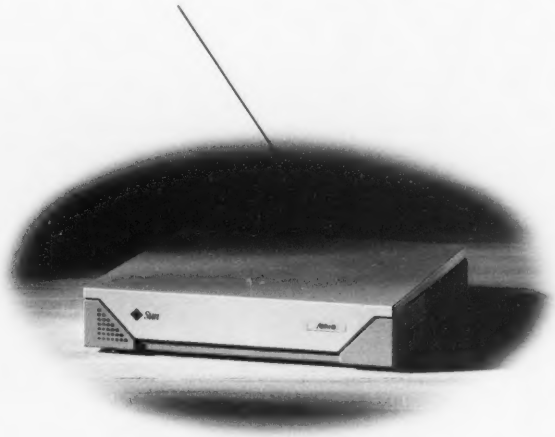
If you think this is a headache, wait until your users complain about how slow it is.

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4Front Technologies, Inc. has announced Audioware/6000, an audio system for IBM's RS/6000.

According to the Los Angeles company, Audioware/6000 provides IBM's Micro Channel Architecture-based sound card and AIX device drivers as well as an array of audio applications with X Window System interfaces.

Applications include a Musical Instrument Digital Interface file music notation editor, an audio file player and a digital audio editor.

Audioware/6000 costs $399.

▶ *4Front Technologies*
(310) 820-7365

Farabi Technology Corp. has announced Ultima/400, a Windows-based IBM Advanced Program-to-Program Communications (APPC) gateway that connects Windows clients on LANs to IBM's AS/400.

According to the Saint-Laurent, Quebec, firm, Ultima/400 builds on a single copy of IBM's PC Support/400 or Client Access/400 to provide seamless access to the AS/400.

The product can support up to 254 APPC sessions and provides a range of administrative functions.

Ultima/400 costs $895.

▶ *Farabi Technology*
(514) 332-3455

Argent Software has announced Job Access and Management System (JAMS) 3.2, job scheduling software for Digital Equipment Corp.'s VAX/VMS and Alpha/AXP systems.

According to the Torrington, Conn., firm, JAMS 3.2 lets users automate their VAX and Alpha hardware.

The software defines time ranges used to limit a job's schedule window and submit window and lets users define what action should occur if a job misses those windows.

Prices range from $3,500 to $17,600.

▶ *Argent Software*
(203) 489-5553

Kisco Information Systems has announced DSK Manager 2.10, disk management software for IBM's AS/400.

According to the Mount Kisco, N.Y., company, DSK Manager 2.10 includes disk backup utilities and utilization analysis programs.

The software offers various methods for saving data objects that are in use and supports standard IBM tape and disk drives for backup procedures. Separate backups are available for data objects and program objects, and unused objects can be removed.

DSK Manager 2.10 costs $600.

▶ *Kisco Information Systems*
(914) 241-7233

Veritas Software Corp. has introduced Veritas Volume Manager 2.0, storage management software.

According to the Mountain View, Calif., company, Veritas Volume Manager 2.0 combines software disk array techniques with an on-line architecture and supports RAID Level 5.

Users can dynamically configure and optimize data layouts for physical and logical disk resources.

Veritas Volume Manager 2.0 costs $1,500 for desktop systems and $3,500 for desktop servers.

▶ *Veritas Software*
(415) 335-8000

Product short

Storage Dimensions has announced SuperFlex disk and tape storage systems with support for Sun Microsystems, Inc.'s SPARCservers running Solaris. Cost: $15,590 for an entry-level RAID system with 6G bytes of storage. Storage Dimensions, Milpitas, Calif. (408) 954-0710.

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As a result, here we are months later, and we're still using several thousand reprints of the custom publication as a sales tool for the field, in a customer-deliverable format.

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Roberta Anslow
Program Manager
Hewlett-Packard
Enterprise Application Development

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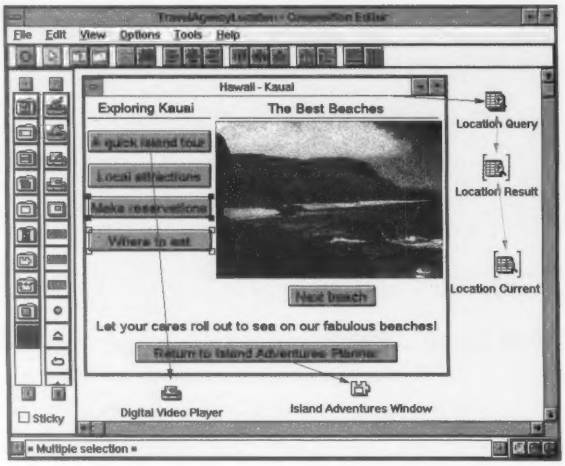
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Developer/2000 fills gaps in Oracle tools

By Howard Millman

Oracle Corp. plans to solve a lot of the problems in its application development tools with Developer/2000, an enhanced integrated version of the company's Cooperative Development Environment (CDE) released two weeks ago.

The product is aimed at the following:

- Slowing the defection of developers to PowerBuilder from Powersoft, a unit of Sybase, Inc.
- Straightening out a confusing mixture of some two dozen more-or-less related development tools collected under CDE.
- Enhancing performance, increasing object orientation and adding support for Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0.

Developer/2000 fills these gaps as well as provides above-average scalability and portability. Its high-productivity framework makes it a sound choice for developers who demand abundant functionality in their Windows design tools.

However, powerful, multifaceted products always come at a price. In the case of Developer/2000, the cost will be $3,995 plus the cost of hardware upgrades and the time required to climb the learning curve, which is steep enough to need rungs.

The product ships on a single CD-ROM, with disk or tape options available. A full install consumes upward of 100M bytes of hard disk real estate and 200M bytes when used with Personal Oracle7 on the same machine.

Memory and storage demands initially caused us some frustration. We began with 16M bytes of RAM in our 66-MHz 486DX2 machine. To finally get all the modules loaded and communicating with one another, including the interdependent demos, we eventually increased RAM to 64M bytes and increased disk space by 300M bytes.

Leading the list of performance and productivity enhancements was the welcome ability to drag and drop iconized code. New to Developer/2000, this feature dynamically partitions an application's logic between the server and client. A test utility, the Performance Event Collection System, will subsequently quantify the performance change. We found this timesaver simple to use.

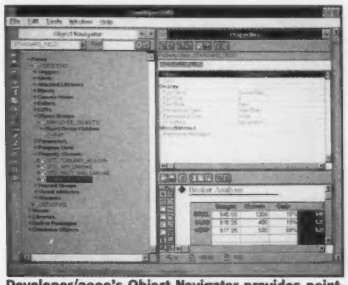
Object Navigator, another worthwhile time-saving feature, displays a hierarchical menu layout, offering convenient point-and-click navigation, drag-and-drop object reuse and property classes. A component of the Forms module, Navigator uses an outline for-

Developer/2000, *page 92*

PRODUCT test DRIVE

Developer/2000
Oracle Corp.
Redwood Shores, Calif.
(415) 506-7000

■ This major upgrade repackages and adds functionality to Oracle's Cooperative Development Environment (CDE) tools. Developer/2000 brings improved performance and productivity to Oracle's CDE.



Developer/2000's Object Navigator provides point-and-click access to objects and property classes

■ The package is priced at $3,995, comparable to PowerBuilder from Powersoft, a unit of Sybase. The only drawbacks are heavy-duty memory requirements and a steep learning curve.

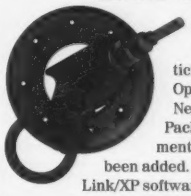
User demands fuel TI support

By Elizabeth Heichler

Customers have demanded that Texas Instruments, Inc. allow its development tools to work with other vendors' wares. And now TI has begun delivering on its promise to do just that.

TI has added the following to its Composer by Information Engineering Facility (IEF) family of products, formerly known as just IEF:

- An application programming interface that lets other vendors extract information from the Composer encyclopedia.
- Documentation about the internal information model of the encyclopedia.
- Details of its messaging protocol, which will let client/server developers use alternatives to Composer's own communications infrastructure.



In addition, the number of participants in TI's program, dubbed Open Initiative, has doubled to 14. New to the program are Hewlett-Packard Co.'s SoftBench development tools. Legent Corp. has also been added. It plans to integrate its DistribuLink/XP software distribution management systems and Endevor software configuration management tools.

Widespread interface info

While TI is currently giving interface information only to third-party vendors who are actively participating in the Open Initiative program, plans are to give this information "to the world at large," said Johnny Long, director of information engineering products and services. He added that this is likely to happen in about a year.

All of this is earning applause from users. "We're hoping many third-party vendors" will make their products work

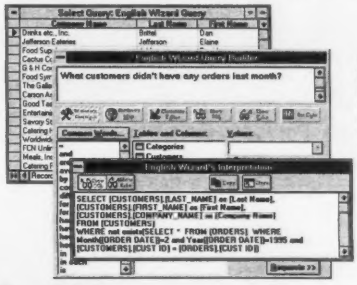
Texas Instruments, *page 92*

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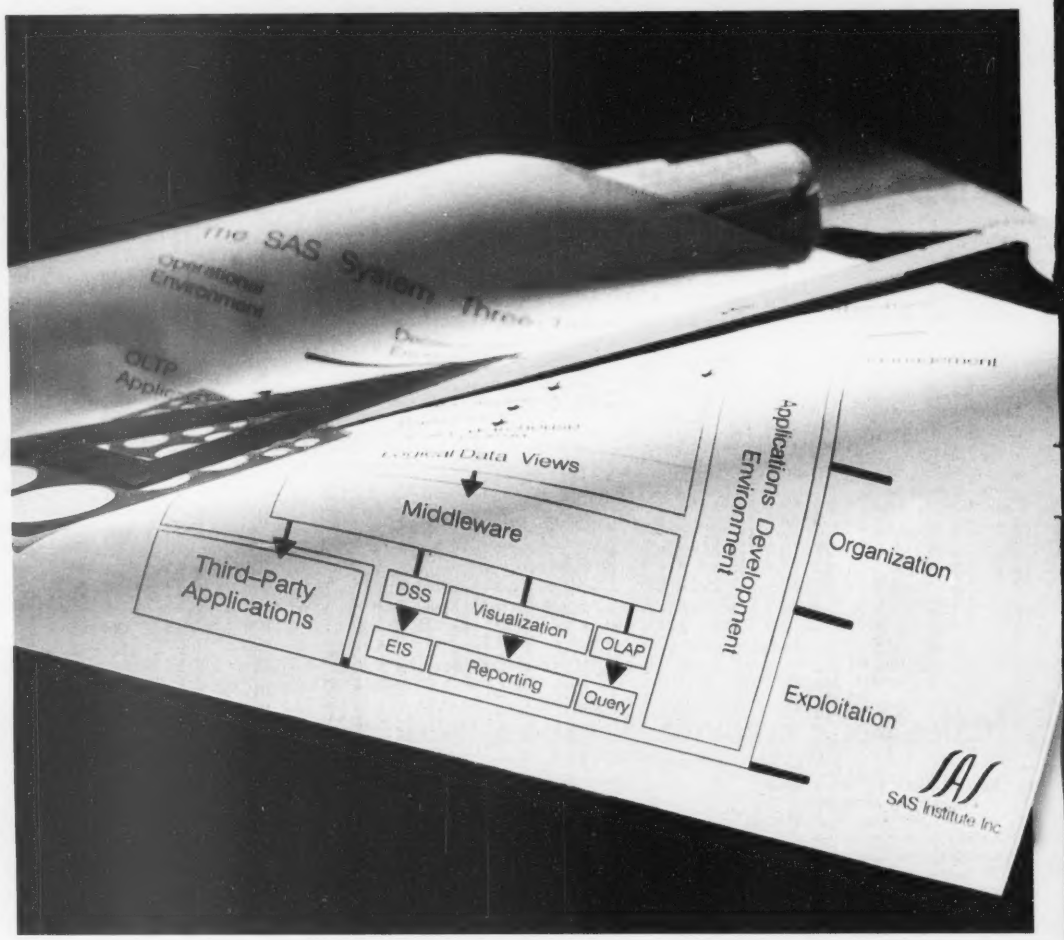
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Users applaud KnowledgeWare's direction

Customers satisfied with focus and direction of company since acquisition by Sterling Software

By Elizabeth Heichler

■ Watching one of your software suppliers get swallowed up in a merger can be a dicey proposition, but so far, customers seem pleased with the direction in which Sterling Software, Inc. has taken KnowledgeWare, Inc. since it acquired the company last December.

This month, Sterling's new Applications Engineering Division in Atlanta rolled out the first major update to the KnowledgeWare software development environment formerly known as Application Development Workbench (ADW). Beta users of the renamed Key for Enterprise 4.0 said the release offers major improvements.

Rebuilding products

Because Key for Enterprise 4.0 has been rearchitected from a 16-bit to a 32-bit product, "it's made a major difference in storage of encyclopedias," said Paul Ratkos, a database designer and operations research specialist at Chrysler Corp. in Center Line, Mich. Encyclopedias now occupy half their former storage space, he said.

Dave James, a data administrator at New York State Electric and Gas in Ithaca, has found that data access time has improved dramatically. It is about 60% faster because of the new back-end data store format in Key for Enterprise 4.0.

James said he was pleased with the transition to Sterling, which he finds more customer-focused than KnowledgeWare. "They were beginning to lose ground on the customer interface and responding to customer requests for change. Sterling now has teams to service territories, and they're better at responding," he said.

"The transition has been very smooth," said Alex Iommazzo, director of software engineering at Automatic Data Processing in Roseland, N.J. Sterling has assigned him several specialized representatives for different product areas, where he previously had a single point of contact. But, he said, "once you get used to it, it's OK."

The transition to an underlying data architecture has also been smooth, Iommazzo added, unlike the "major upheaval" he remembers when KnowledgeWare moved from Release 1.6 to 2.7 of ADW. "The way [Sterling] did this, they changed the underlying engine just the way they stored data, so it's transparent to users," Iommazzo said.

"I think it took them a long time to get the acquisition done and get back to their customer base with what their plans were," said Mike Blechar, research director for application development at Gartner Group, Inc. in Stamford, Conn. "But the acquisition has been a positive step, and Sterling will do a lot over the next two or three years to make the suite more competitive and raise their leadership role back to where they were a few years ago."

Items on users' wish list include support for code generation beyond Cobol. "Without generating C or C++, it limits your opportunities," Iommazzo said.

The jury is still out on Sterling's long-term direction. "Time will tell if Sterling believes that mainframe CASE is still alive," Iommazzo said. "Over time, we'll see where they put their resources. Mainframes are still viable, and Cobol is getting a bad rap."

Key modules

Key for Enterprise 4.0 will be available in the following product suites:

Key:Concept: Aimed at business process design, it includes modules for planning, methodology, business analysis, a LAN-based project team tool and a consulting services component. Price: $109,000.

Key:Deliver: Provides detailed design of client and server portions of an application based on the business requirements derived from Key:Concept. It includes code generation tools, fourth-generation language visual development tools and consulting services. Price: $120,000.

Key for Enterprise 4.0 is scheduled to begin shipping by month's end, and its component modules range in price from $895 to $10,750.

— Elizabeth Heichler

Texas Instruments

CONTINUED FROM PAGE 89

with IEF, said Joe Genua, information systems specialist at Southern New England Telephone in New Haven, Conn. He is discussing participation in the TI program with several vendors, which he declined to identify.

"The decision has been: Should we use a closed environment that generates good code?" Genua said. "Now we can get the best of both worlds."

At the Missouri State Highway Patrol in Jefferson City, IS director Gerry Wethington is interested in integrating the IEF line and Lotus Development Corp.'s Notes groupware products. "Notes is a very viable development environment for us given the mobility of highway patrolmen," he said.

Wethington said he would like to integrate Notes applications — which highway patrol personnel use in their cars — with enterprise-level, criminal justice applications that are based on IEF. To that end, he has approached TI and Lotus, but Lotus has not responded about its willingness to integrate with IEF.

Standard goals

TI's long-term strategic direction for the product lies in its work with Microsoft Corp. to lay down a standard for an open repository. TI plans a major release of Composer in the first quarter of next year that will incorporate Microsoft's technology and be oriented toward component-based development, Long said.

In the shorter term, some TI customers are working to strongly encourage third-party vendors to join Open Initiative. For example, Chubb & Son, Inc. in Warren, N.J., pressed software testing tool maker Quality Engineering Software, Inc. (QES) in East Hartford, Conn., to join, a QES spokesman confirmed.

By allowing Chubb to integrate other tools with TI's product, the program lets it leverage its existing investment in those third-party products, according to Tom McMinn, information engineering group manager at Chubb. It also will improve productivity by removing the need to enter data that already exists in IEF into applications such as the QES testing package.

Future partnerships

Down the road, McMinn would like to see TI work with BMC Software, Inc. in Houston, which provides tools for database administration. With such integration, database administrators will be able to extract table definitions and structures from the Composer encyclopedia.

Walter Ellis, a systems analyst at Arizona State University in Tempe, said the Open Initiative program will help him deploy applications on platforms that IEF has not supported, including the Macintosh.

"We can write a front end for Macs, and we can use the Mac client provided by PowerBuilder to gain access to Composer routines," he said.

Ellis' group is using Composer to develop enterprise applications. It is also beta-testing a release of PowerBuilder for the Macintosh from Powersoft, a unit of Sybase, Inc., to develop client front ends. New Open Initiative participant MidCore Software, Inc. will provide Arizona State with middleware for this application. The middleware will fit into the IEF environment as an alternative messaging interface when PowerBuilder for the Macintosh ships in June, according to a MidCore spokesman.

Developer/2000

CONTINUED FROM PAGE 89

mat that enables users to expand and collapse headings to vary the degree of detail available on objects and their relationships.

Navigator's multiple editors speed object and text editing functions including cut, copy and paste. The module works across all Developer/2000 tools.

Developer/2000 applications run on two dozen platforms including Microsoft's Windows 3.1 and Windows NT, the Open Software Foundation's Unix Motif, the Macintosh, Power Macintosh and OS/2. Modules include Forms, Graphics, Reports and a developer's version of Browser. All modules are either new or updated for Developer/2000.

PRODUCT test DRIVE

Graphical features

Forms consists of the Object Navigator, Layout Editor, Procedure Builder and Property Palette. By using these four integrated graphical components, users can drag and drop procedures between forms, determine inheritance and object ownership and create reusable property classes and object types.

Forms will call nonnative Dynamic Link Libraries as well as external routines from Windows' software developer's kit.

Forms' Procedure Builder provides the application partitioning as well as tools for debugging client and server logic. Forms' Property Palette combines individual objects or groups of objects into a single-compound object. We would like to see Forms made into an OLE 2.0 server in a future release.

How it works

The Graphics module creates data-driven, interactive graphical objects such as graphs, drawings and images. As an OLE 2.0 server, the module allows developers to embed its Smart Charts in OLE containers and code them to dynamically respond to changes in data values. Reports, an OLE 2.0 container, accepts embedded objects from an OLE 2.0 server, including multimedia objects.

Oracle recently announced the elimination of runtime fees for Developer/2000, excluding Browser. The package costs $3,995, placing it in the same league with the $3,449 PowerBuilder but well ahead of it in terms of functionality and scalability. Oracle's price includes free technical support.

Millman is principal at Data Systems Services in Croton, N.Y., a consultancy that specializes in information systems services.

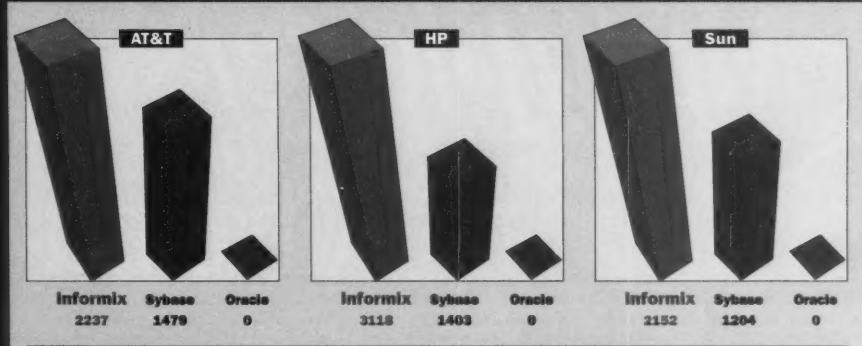
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And where's Oracle in all this? Missing in action.

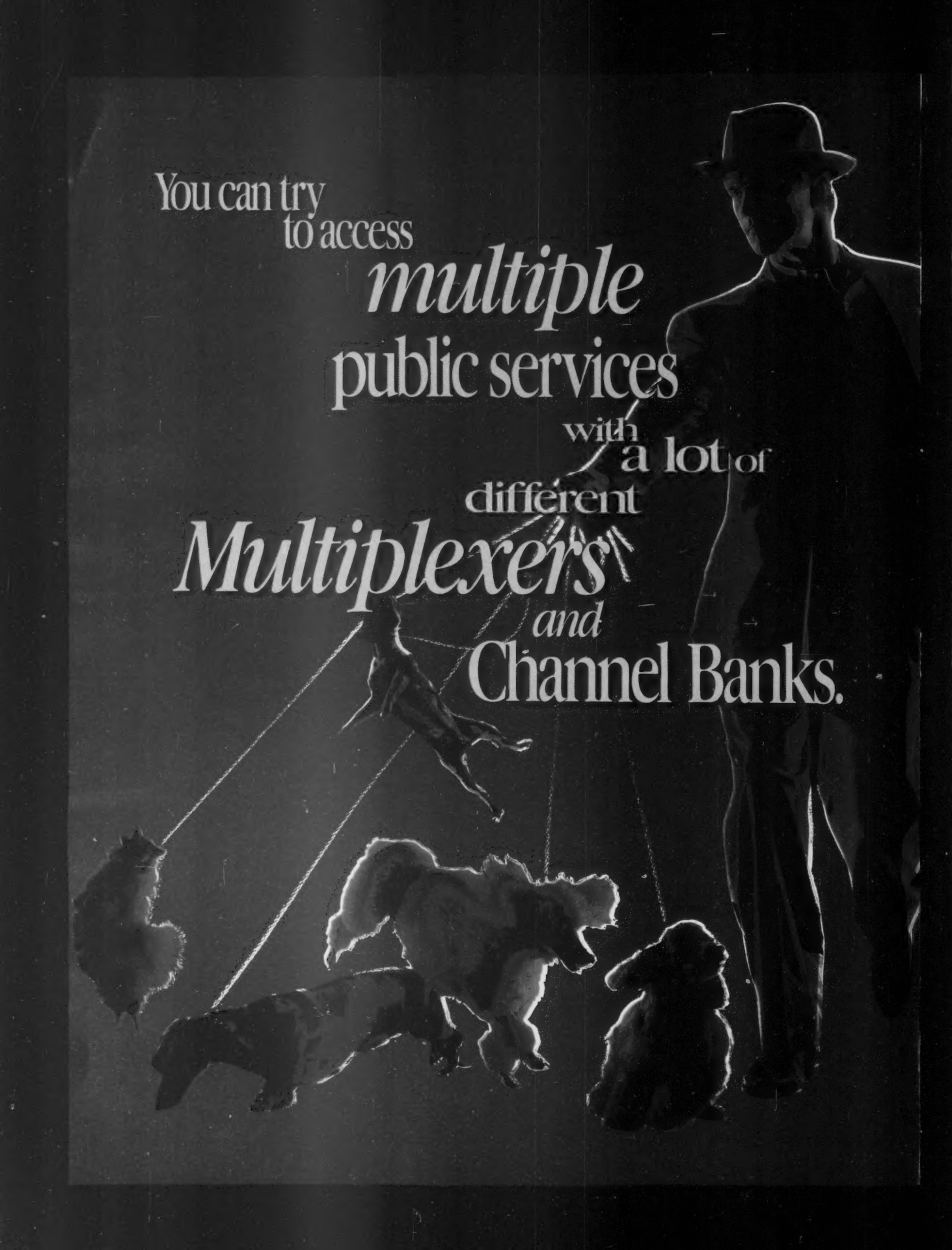
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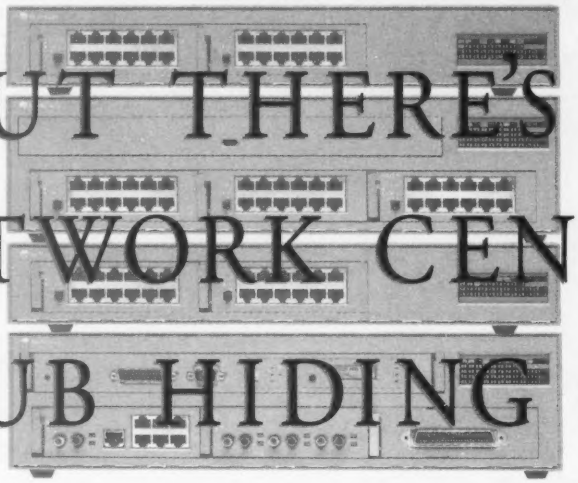
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Intek Technologies, Inc. has announced Clarity, a visual development environment.

According to the Atlanta firm, Clarity provides visual modeling for databases and client/server development tools.

The product lets users model and store data in an Object Gallery as well as generate data to visual development tools and databases.

Clarity costs $149.

▶ *Intek Technologies*
(404) 239-1725

SQA, Inc. has announced SQA Teamtest 3.1, an automated client/server testing tool that supports PowerBuilder 4.0 from Powersoft, a unit of Sybase, Inc.

According to the Woburn, Mass., firm, SQA Teamtest 3.1 is automatically integrated with a network test repository.

The product integrates test planning, development, execution, results analysis, defect tracking and summary reporting. Features include object-oriented recording and enhanced test cases and result analysis.

SQA Teamtest 3.1 costs $2,495 per user.

▶ *SQA*
(617) 932-0110

Atria Software, Inc. has announced ClearCase Attache, a client/server software configuration management product for Windows developers.

According to the Natick, Mass., firm, ClearCase Attache manages local work spaces on the Windows client and uses Atria's ClearCase on Unix or Microsoft Corp.'s Windows NT as the server.

Features include file compare and merge facilities, an optional PC-based builder and integration with Microsoft's Visual C++.

ClearCase Attache costs $995.

▶ *Atria Software*
(508) 650-5195

Mortice Kerns Systems, Inc. has announced MKS Source Integrity 7.1, a project-oriented configuration management system.

According to the Waterloo, Ontario, company, MKS Source Integrity 7.1 features project management facilities, visual merging, reporting, event triggers, a new configuration language and integration with Microsoft Corp.'s Visual C++ and Borland International, Inc.'s Borland C++.

MKS Source Integrity 7.1 costs $449.

▶ *Mortice Kerns Systems*
(519) 884-2251

Four Seasons Software, Inc. has announced SuperNova 5.0, a fourth-generation language for building enterprise-wide, production-grade applications.

According to the Edison, N.J., company, SuperNova 5.0 features team development and version control, partitioning management and distributed file objects for transparent file access.

Enhanced graphical user interface objects and tools for enterprise connectivity are also included.

Prices range from $1,000 to $6,000.

▶ *Four Seasons Software*
(908) 248-6667

PowerCerv has introduced PowerTool 3.2/4.0, an object class library for developers who use PowerBuilder from Powersoft, a unit of Sybase, Inc.

According to the Tampa, Fla., firm, PowerTool 3.2/4.0 lets users create their own stored procedure update calls for Oracle, Inc. and Sybase databases without relying on database administrators.

A tab object is modeled after Microsoft Corp.'s Word 6.0 Options dialog. Objects include functions, menus, windows and DataWindows.

PowerTool costs $249.

▶ *PowerCerv*
(813) 226-2378



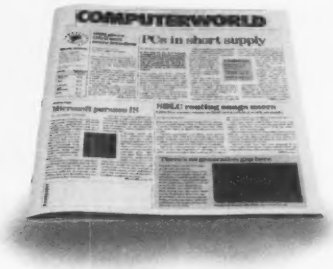
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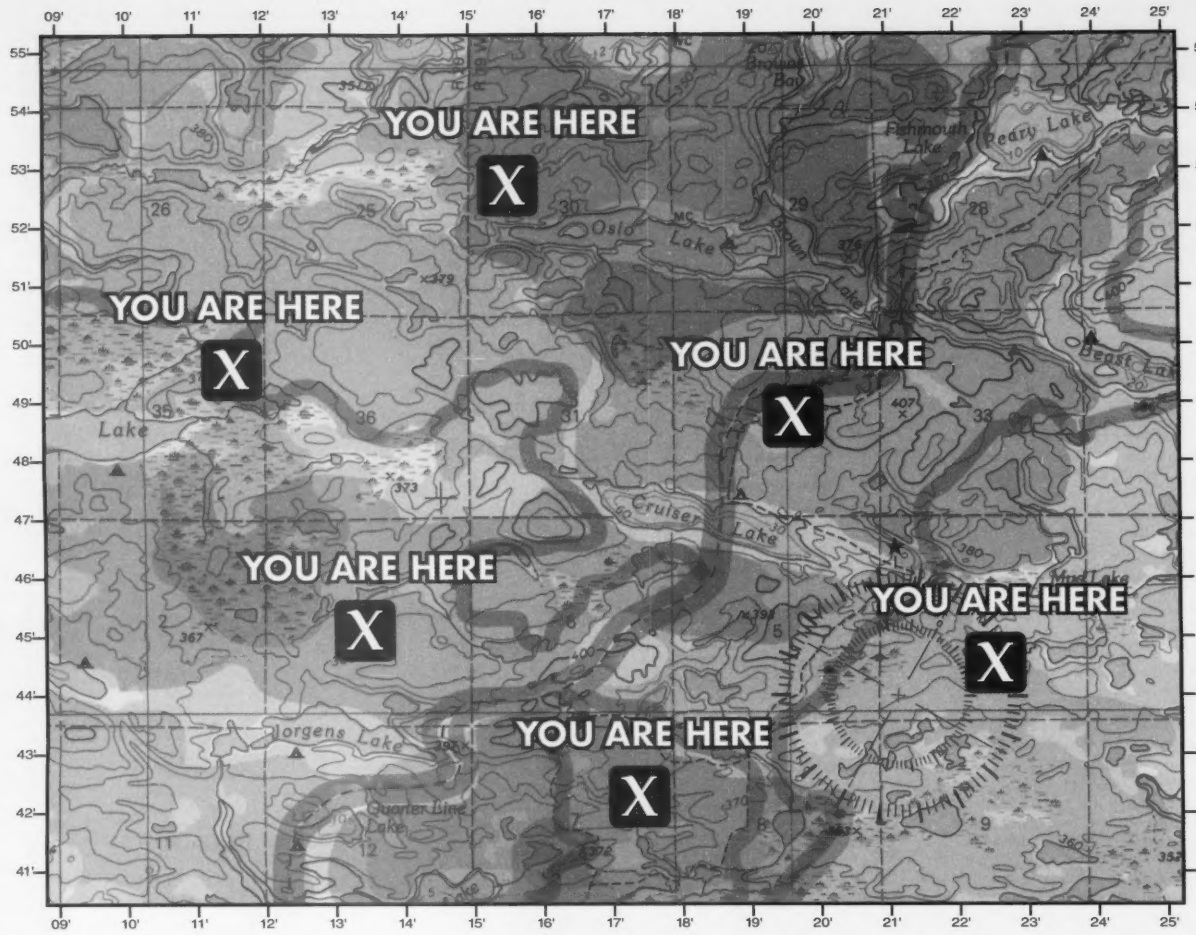


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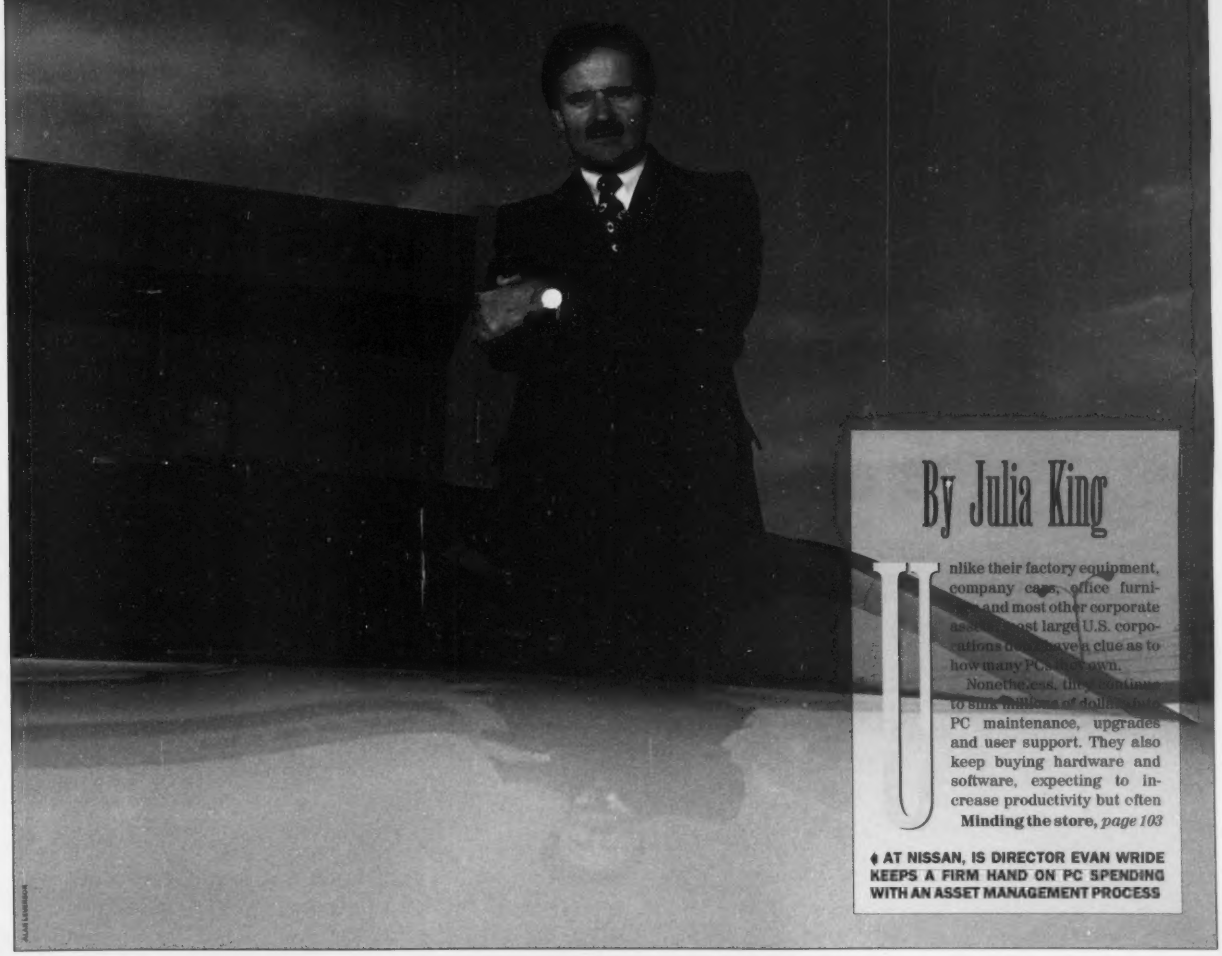
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INSIDE: Training resources for retackling re-engineering. Page 108

MINDING the STORE?

MOST ORGANIZATIONS DON'T KNOW HOW TO MANAGE THE COMPUTER ASSETS THEY OWN. BUT THEY CONTINUE TO INVEST BLINDLY IN MORE PCs, MAINTENANCE AND SUPPORT EACH YEAR—AT GREAT COST AND GREAT LOSS.



ALAN LEVENSON

By Julia King

Unlike their factory equipment, company cars, office furniture and most other corporate assets, most large U.S. corporations don't have a clue as to how many PCs they own.

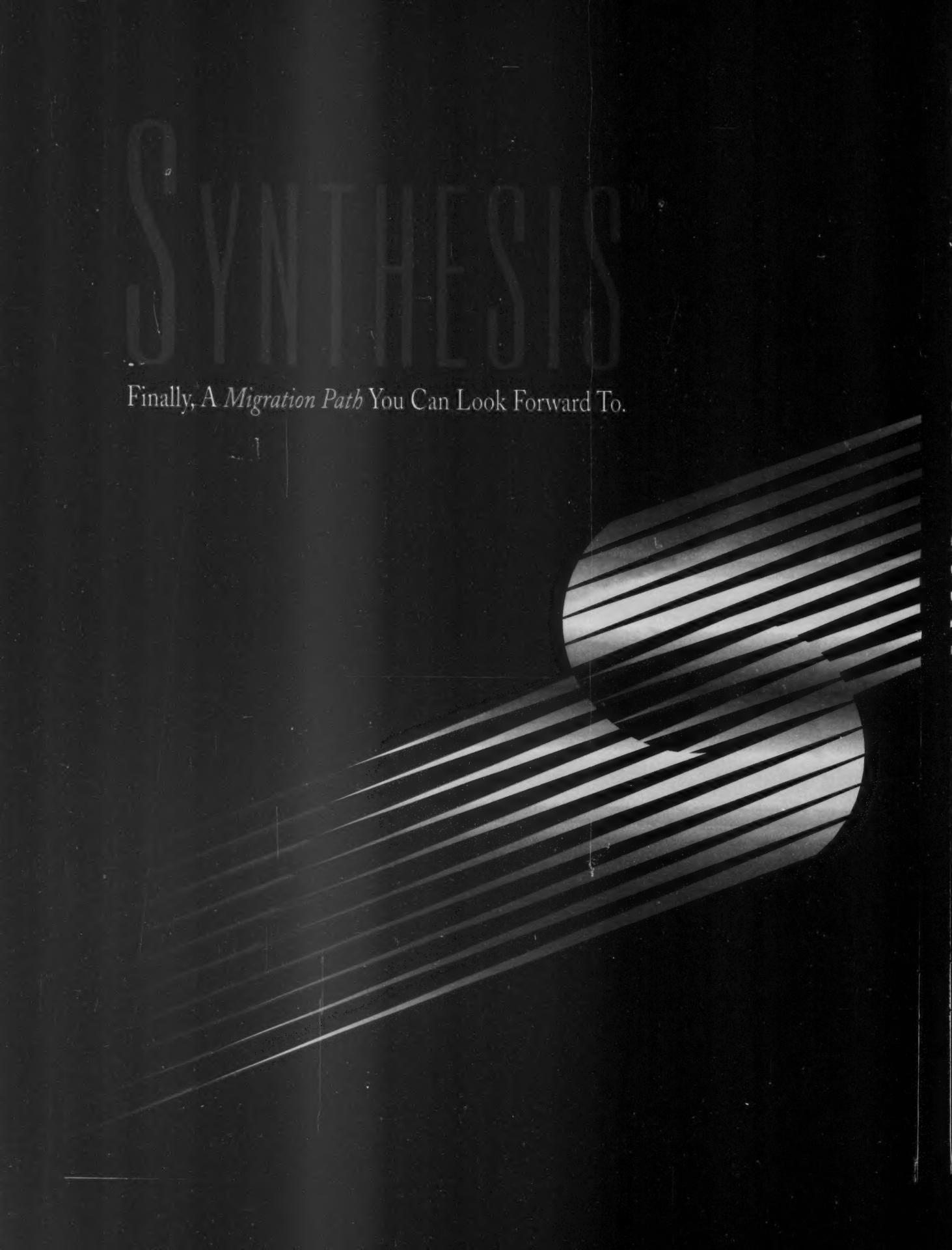
Nonetheless, they continue to sink millions of dollars into PC maintenance, upgrades and user support. They also keep buying hardware and software, expecting to increase productivity but often

Minding the store, *page 103*

♦ AT NISSAN, IS DIRECTOR EVAN WRIDE KEEPS A FIRM HAND ON PC SPENDING WITH AN ASSET MANAGEMENT PROCESS

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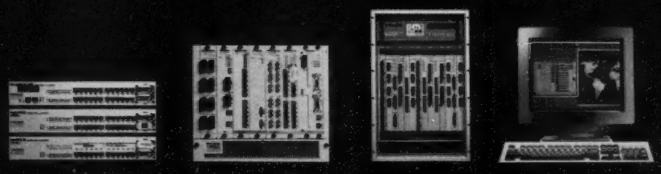
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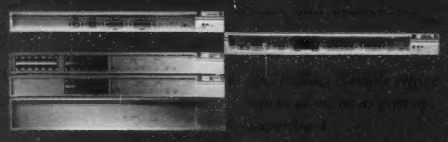
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MINDING the STORE?

CONTINUED FROM PAGE 99

ending up disappointed.

The result, experts say, is a crisis in asset management. The already large number of PCs left to waste away in corporate storerooms is increasing all the time. And these aren't just obsolete, unusable models. Many are perfectly serviceable PCs that could be deployed today. The problem is companies don't know about them or forget they exist, so they buy more.

"We regularly have customers who are 50% off in estimating their number of desktop devices. We've also found warehouses full of 286s," reports Gerry Gagliardi, vice president of worldwide customer service at Unisys Corp.'s desktop services group in Blue Bell, Pa.

Reining it in

But with the costs of corporate PC inventories and support spiraling out of control, it is not surprising that senior executives are flabbergasted and are demanding that information systems organizations reel in costs before they soar even higher.

"Distributed computing is turning out to represent a much bigger cost item than anyone ever thought, and chief financial officers are finding it first [because] much of the cost is being embedded in departmental budgets," says Gerry Loev, president of CSC Information Technology Consulting in New York.

"The numbers also get big enough for CEOs to notice," says Evan Wride, IS director at Nissan Motor Corp. in Carson, Calif.

Also heightening the already high sense of urgency to cut costs is the pending release of Microsoft Corp.'s Windows 95 operating system, due out this summer. "One of the biggest fears companies have today is that when Windows 95 gets here, they won't be able to control the number of licenses," Gagliardi says.

Effective PC asset management programs, which include regularly updating equipment and software inventories and ongoing PC usage monitoring, could result in more than $20 billion in annual savings.

SOURCE: PERSONAL COMPUTER ASSETS MANAGEMENT INSTITUTE INC., ROCHESTER, N.Y.

Legal problems are another threat of unbridled PC growth, according to Andrew Dailey, a London-based analyst in the software asset management service of Gartner Group, Inc. in Stamford, Conn. "I would not be surprised if over the next five years there are some shareholder suits due to the fact that there are assets greater than show on companies' balance sheets," Dailey says.

Consultants say companies with enterprise asset management systems in place remain few and far between. It's not for lack of technology help. Dozens of software tools for managing IS assets are on the market today. There are also plenty of vendors who have joined traditional outsourcing firms in offering asset management services. These include Unisys, Entex Information Services, Inc. in Rye Brook, N.Y., Bell Atlantic Business Systems Services in Fraser, Pa., and IBM Credit Corp. in Stamford, Conn., which recently purchased Chrysler Systems, a former unit of the automaker that sells asset management software and services.

WHAT YOU DON'T KNOW WILL HURT YOU

FAILURE TO MANAGE COMPUTER ASSETS IS TAKING A HIGH TOLL ON U.S. CORPORATIONS

EFFORTS TO MANAGE THE 60 MILLION PCs AND 80,000 INDIVIDUAL COMPONENTS NOW IN THE WORKPLACE ARE LARGELY NOT SUCCEEDING:

USERS LOSE $20 BILLION ANNUALLY FROM:

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- unused equipment warranties.
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- unrealized volume purchase agreements.

SOFTWARE VENDORS LOSE $1 BILLION ANNUALLY FROM NONCOMPLIANCE BY USERS ON SOFTWARE LICENSING.

SOURCES: THE PERSONAL COMPUTER ASSETS MANAGEMENT INSTITUTE, INC., ROCHESTER, N.Y., AND THE SOFTWARE PUBLISHERS ASSOCIATION, WASHINGTON

"Distributed computing is turning out to represent a much bigger cost item than anyone ever thought."

— GERRY LOEV, PRESIDENT OF CSC INFORMATION TECHNOLOGY CONSULTING IN NEW YORK

Most asset management software systems available today are sold in modules that address individual management functions such as inventory and procurement.

In addition to tracking PC hardware and software configurations, asset management systems can track who's using the system, for what and with what. Experts estimate that by tracking the latter two items, companies could reduce overall software purchase costs by as much as 30%. Most of the cost savings come from reallocating software licenses that may be unused in one department to other departments and business units.

Life span analysis

Before any of these products and services can be deployed effectively, however, experts say companies must conduct a cradle-to-grave analysis of how PC assets are managed. This entails examining activities that take place across the entire PC life cycle, from technology needs forecasting and prepurchase systems evaluations to PC disposal. Steps in between include ongoing software licensing and PC inventory management and product support.

"Gaining control is not a one-step process but a multistep process," says Gene Friedman, vice president of applied technology at The Chase Manhattan Bank NA in New York.

"We have always had fixed-asset systems that tracked the IS assets of the organization," Friedman says. "Whether that asset was an IBM 3090/600J mainframe or a desktop, it was tracked in a fixed-asset management system and depreciated.

"But now, there is an understanding that there's a difference between tracking a mainframe or a desktop and tracking the contracts involved in thousands of PCs and thousands of pieces of software," Friedman says. Service contracts, licenses and vendor reports must also be tracked. This information, in turn, is used to make other decisions throughout the PC life cycle.

But before managers can make any informed decisions, "the very first step is knowing what you have," Friedman says. This involves taking a physical inventory. After that, standards must be set. Then, the major task is creating a database and keeping it current.

"Asset management," Friedman says, "is really the foundation for leveraging open systems."

So why don't more companies do it?

Poor management

The major stumbling block is a managerial one. Tracking and managing technology assets in today's distributed computing environment is a very delicate challenge, one that can be fraught with political minefields.

For example, longtime PC users frequently regard the computers on their desks as personal possessions rather than corporate assets. As a result, attempts to manage in-place resources are often viewed more as interference than assistance, according to IS managers.

Moreover, the price of individual software packages and peripherals such as CD-ROM drives and memory cards continues to drop. As a result, individual users now have the wherewithal to buy what they want and write it off on corporate expense reports.

So at most corporations, "there is no central repository of information," Loev says. "What you're left with is management practices that each department employs."

Because the corporate PC asset base is so often unknown, experts say companies regularly overspend on software, software licenses and hardware. As much as 30% of corporate PC expenditures may fall into this category, according to the Personal Computer As-

Minding the store, *page 105*

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1. ENTRY: Complete the section of the official entry form that explains how you rely on Computerworld for information useful to you in your work. Also provide your name, title, company name, address and phone number on the entry form. FAX entry to the phone number or mail to the address on official entry form. Entries must be received no later than 5/5/95. Not responsible for late or lost FAX or mail. Entrants grant permission for the use of their names, titles and company and their comments on submitted entry forms for advertising for this, or similar promotions, without additional compensation. **2. JUDGING:** Sweepstakes Grand Prize Winner will be selected in random drawing of entries on 5/12/95. Drawing will be conducted by The Promotion Partnership who reserves exclusive right to interpret all conditions of promotion without claim for damage or recourse of any kind. By participating, entrants agree to be bound by rules and judges' decisions, which are final. **3. PRIZES:** 1. One (1) Grand Prize: Dell Dimension XPS P100 desktop computer with 17" monitor and 16MB RAM (estimated value: $4,400), 2. One hundred (100) "Second Prizes": Rich Tennant Cartoon Screen Saver (estimated value $5.00). Odds of winning Sweepstakes depend on number of entries received. Winners agree that Computerworld, Inc., their advertising and promotion agencies, affiliates and employees have no liability in connection with acceptance or use of prizes awarded herein. **4. NOTIFICATION:** Grand prize winners will be notified on, or about 5/19/95 and will be required to sign Affadavits of Eligibility and Releases which must be returned within 14 days. No prize substitution is permitted. All taxes, fees, etc. are winners' responsibilities. "Second Prize" winners will be notified by mail with receipt of their prizes. **5. ELIGIBILITY:** Contest/Sweepstakes is open to persons who are 18 years or older, except: 1) employees of International Data Group (IDG), their immediate families and its agencies, and 2) employees of companies that manufacture, distribute or resell computers and computer-related equipment, their immediate families and their agencies. Void where prohibited, taxed or restricted by law. **6. WINNER LIST:** For winners' names, send a stamped, self-addressed envelope to: Computerworld Winners, c/o The Promotion Partnership, 50 Francisco St., Suite 235, San Francisco, CA 94133. Offer expires 5/31/95.

Official Entry Form

WHY I RELY ON COMPUTERWORLD FOR INFORMATION USEFUL TO ME IN MY WORK:

"_____

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_____"

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip Code _____

Telephone _____ FAX _____

FAX THIS FORM TO: (415) 288-6799 or
MAIL TO: Computerworld Sweepstakes
c/o The Promotion Partnership
50 Francisco Street, Suite 235
San Francisco, CA 94133

Entry Deadline: May 5, 1995
Drawing will be held May 12, 1995

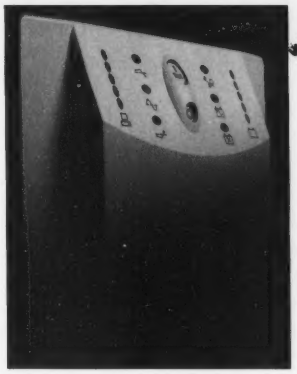
Don't forget — if your entry is among the first 100 entries received, we'll send you a free Rich Tennant cartoon screen saver.

COMPUTERWORLD
The Newspaper of IS



APC CURRENTS

Enhanced Smart-UPS, hot new UPS lines make APC your one stop shop



APC has introduced a host of new products designed to help our customers add reliability to all their applications, from the most basic desktop PC to the most advanced datacenter. With a significant feature upgrade to our award-winning Smart-UPS line, and two new lines (the Back-UPS PRO and the Smart-UPS Value Server v/s) to suit any price point or application, APC is your best choice for one-stop shopping for power protection products.

New Smart-UPS: Performance power management for advanced business networks

The enhanced Smart-UPS sets a new standard in protection for file servers and other mission-critical network applications. The units feature APC's innovative **SmartSlot**, which lets you customize and enhance the management, control and performance of the Smart-UPS with accessories such as the PowerNet SNMP Adapter card or the UPS Interface Expander card for multiple OS unattended, graceful shutdown. The internal SmartSlot option means convenient, seamless integration of UPS accessories. The SNMP adapter, for example, can be easily configured over the network

See **One-stop shop**, *continued on page 9...*

Lotus, APC partner on safe shutdown for Notes

Runs With Lotus NOTES

APC's PowerChute *plus* for works in conjunction with APC's UPS systems to provide graceful, unattended shutdown of Lotus Notes OS/2 and NetWare servers in the case of an extended utility power interruption. PowerChute *plus* also provides remote power management and monitoring via an interactive GUI, warning of power problems before they affect system integrity.

Jeff Papows, VP Notes Product Division, Lotus Development Corp. commented: "PowerChute *plus* significantly adds to the reliability and up-time of Lotus Notes Servers by protecting them for all types of common power problems. The remote power management and diagnostics provided by APC's PowerChute *plus* is a very valuable tool for any Notes administrator."

> *"PowerChute plus significantly adds to the reliability and up-time of Lotus Notes Servers..."*
>
> *Jeff Papows, VP Notes Product Division, Lotus Development Corporation*

PowerChute *plus* for OS/2 and PowerChute *plus* for NetWare is currently available with a U.S. list price of $99. Call 1-800-800-4APC for more information or to get your FREE self-running demo disk.

WHAT'S INSIDE:

New Products
Enhanced Smart-UPS ..... pg 1
Back-UPS PRO ..... pg 9
Smart-UPS v/s ..... pg 9
ProtectNet ..... pg 9
SmartCell XR ..... pg 13
Call-UPS II ..... pg 13
Back-UPS 200/280 ..... pg 4
FlexEvents ..... pg 5

Satisfied Customers
American General Finance ..... pg 2
Novell ..... pg 3
Beth Israel Hospital ..... pg 3
RII ..... pg 6
CVS ..... pg 14
On-Location Video ..... pg 16
General Electric etc. ..... pg 8

Awards & Reviews
LAN Times ..... pg 2
VARBusiness ..... pg 4
PowerManager raves ..... pg 5
Awards en Francaise ..... pg 6

Tips & Tutorials
Bulletproof your system ..... pg 12
POS protection tips ..... pg 14

HypeAlert
The on-line sham ..... pg 7

APC
AMERICAN POWER CONVERSION

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PART NO. 996-0417

Microsoft pegs APC for video server support

Microsoft has selected APC Smart-UPS for the protection of their new Tiger systems. The video file servers, with Compaq CPU's, expect to be a significant part of the so-called Information SuperHighway.

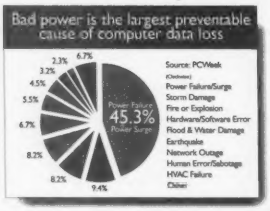
Microsoft made the announcement at a press conference in Washington, which featured a display of APC's Smart-UPS.



"This is an exciting new opportunity," said APC Smart-UPS Business Unit Manager Ray DeSabato. "With the eyes of the world on every development of this type, Microsoft chose the most reliable protection they could find."

Bad power the most common cause of data loss

A study from leading consultant Contingency Planning, published in *PCWeek*, reported that power problems were by far the leading cause of data loss at computer sites, ranking far ahead of viruses, human error, and so forth. We're not surprised!



Forbes ranks APC first

Forbes Nov. 7 issue touted APC as one of the best performing companies in the country, ranking the company first on its "Top Tier" list of the best small companies in America.

"What does it take to make this charmed circle? Plenty of grit and guts. That means more than doubling sales and earnings in less than five years," said the editors. For a free investor kit on APC (NASDAQ: APCC) call 1-800-800-4APC.

Protecting LAN clients key to business success



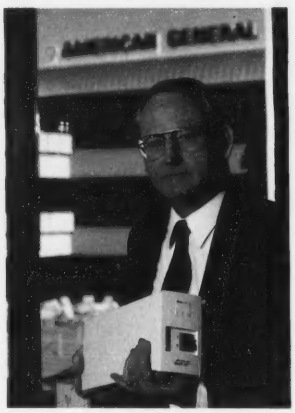
Everyone knows that servers demand full UPS protection, but what about LAN clients and PC's? At American General Finance, Jerry Gilpin, VP Information Systems and Services, sees the problem in straightforward terms: "Reliable power equals high availability, which equals great customer service."

American General is a consumer finance company with more than $7 billion in assets, 1200 branches and more than 3,000,000 customers counting on network reliability. In each branch, they have APC Smart-UPS 600's protecting AS/400's, then a Back-UPS 250 in each branch on the client consoles.

APC SATISFIED CUSTOMER

"Reliable power equals high availability, which equals great customer service..."

Jerry Gilpin, VP IS& Service, American General Finance



"Our branches are focused on customer service and high systems availability is essential to provide a high level of customer service," he said. "The APC UPSes play a key role in this. We've found the APC product did what we expected it to do right from the beginning, particularly this winter when we had frequent power outages and fluctuations at the branches."

To learn more about protecting your network workstations, call 1-800-800-4APC.

APC takes fifth consecutive LANTimes Readers Choice



Winning such a strong endorsement from such a knowledgeable reader base is like winning the Super Bowl. Winning it more than once is rare for most teams. Winning five times is simply amazing.

For the **fifth consecutive year**, APC received the 1994 *LAN Times* "Readers Choice Award" for UPSes. Results concluded "landslide victories scored by American Power Conversion and Novell."

APC's streak began in 1990 and shows no signs of letting up. The annual survey of more than 150,000 readers determines which vendors are supplying the best solutions in key networking-technology categories.

"Landslide victories were scored by APC and Novell..."

LAN Times

READERS CHOICE 1994

1990
1991
1992
1993
1994

Call APC at 1.800.800.4APC Fax to 401.789.3710 FaxBack service: 1.800.347.FAXX Compuserve: GO APCSUPPORT Internet: apctech@apcc.com

Beth Israel selects Matrix-UPS



Beth Israel Hospital is in the middle of a very serious operation: "Rightsizing" mainframe systems to a campus-wide client server network.

They run a variety of operating systems, including NetWare, Macintosh, and SunOS on a variety of networking and internetworking hardware.

The one constant is power problems from local construction and poor utility power. According to Lynda E. Rudolph, Manager of Network Services (seated), "We actually had a PO for five older type UPSs which we cancelled when we saw Matrix-UPS. The modularity, the multiple server shutdown support, and APC's ability to support multiple OS made the difference."

Beth Israel is also moving departmental fileservers to a central server room. While in a typical network, each file server has its own UPS, Beth Israel's data center just didn't have the physical space for all of that equipment. "We thought that it would be nice to put the same things all on one UPS."

While modular SmartCell battery packs were one of the most important features for choosing the Matrix product line, Rudolph said APC's also had specialized software that could shut down multiple servers.

"The larger UPSs just didn't have this specialized software. This was one of the most important things we looked at when we chose the product."

APC SATISFIED CUSTOMER

"We actually had a PO for five older type UPSs which we cancelled when we saw Matrix-UPS..."

Lynda E. Rudolph (seated), Manager of Network Services, Beth Israel Hospital



Smart-UPS fight flood of problems at Novell



Come rain, fire, gloom of night, even flood, APC Smart-UPS keep networks going. In a Novell sales office, Regional Manager Mark Conley got an urgent call. Hearing the words "water main break" he assumed the worst.



"They told me on the phone that the computer room had inches of water on the floor. My first thought was that all our computer systems were ruined," he said. The room housed their Compaq Presario servers, which handled all e-mail and office automation, as well as linked them to the company WAN.

"When I arrived, I looked into the computer room and saw the Smart UPS 2000 sitting in an inch and a half of water, working just fine, as though nothing was unusual," said Conley. "We lost no data to this disaster, and remarkably, no equipment. I immediately moved the Smart-UPS to a shelf while it remained working, and here we are many months later...No problems whatsoever."

Based on past experiences, this reliability hasn't surprised Conley.

"We had tried other brands in the past, much larger units, and we found that they just wore out or stopped working," said Conley. "We've used APC here now for at least four years, with more than a dozen units around the office, and we're very well satisfied.

"We were even more impressed to discover that the units are amphibious!"

APC SATISFIED CUSTOMER

"We've used APC here now for at least four years...and we're very well satisfied..."

Mark Conley, Regional Sales Manager, Novell Inc.

Try a new Smart-UPS/ PowerChute Bundle!

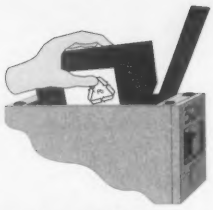


Concerned about network reliability? Next time you purchase a Smart-UPS, purchase a Smart-UPS Bundle instead. The new Smart-UPS Network Bundle combines APC's award winning PowerChute *plus* monitoring software with Smart-UPS models 600, 900, 1250 and 2000. You can choose the version of PowerChute *plus* that matches your operating system: NetWare, Windows NT, OS/2 or SCO UNIX.

The Smart-UPS 600 (part# AP600NET), 900 (part# AP900NET), 1250 (part# AP1250NET) and 2000 (part# AP2000NET) Network Bundles are now available with US list prices of $588, $888, $1088, and $1788 respectively.



So next time you order APC Smart-UPS, order a bundle instead! Call your dealer/ distributor today!



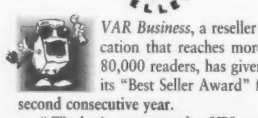
Back-UPS get User Replaceable Batteries



APC has added even more benefits to the world's top selling Back-UPS line. The domestic Back-UPS 250, 400, 450 and 600 models are now shipping with user replaceable, hot-swappable batteries. This feature allows the user to replace exhausted batteries on site rather than shipping the unit back to the factory for service; the result is lower service costs and increased product life span. The hot-swappable batteries also reduce downtime, as the batteries can be replaced in less than a minute while the UPS continues to support the computer.

Battery replacement kits are available through distribution and by contacting APC. The kits are shipped in reusable and recyclable boxes with a postage prepaid and preaddressed label for shipping the batteries directly to a battery recycling center, which reduces the likelihood that the used batteries are disposed of improperly.

Value-Added Resellers say APC is tops...



VAR Business, a reseller publication that reaches more than 80,000 readers, has given APC its "Best Seller Award" for the second consecutive year.

"We don't trust any other UPS manufacturer. Nobody else matches APC's product quality and sales and support service," said one reseller interviewed.

APC, DEC enter new strategic partnership

APC and Digital Equipment Corp. are strengthening ties to provide enhanced levels of product support to both APC and Digital corporate customers.

As part of this agreement APC has committed to support its PowerChute *plus* UPS management software for the Alpha platform. Operating systems will include Windows NT, OSF/1 and Open VMS. APC's PowerChute *plus* software performs automatic, safe shutdown, scheduled automatic UPS testing, environmental monitoring and network alerts.

In addition, Digital will begin selling APC's Matrix-UPS, designed to address the current rightsizing trend of today's computing environments. The product is specifically designed to support datacenters of large corporate end users.

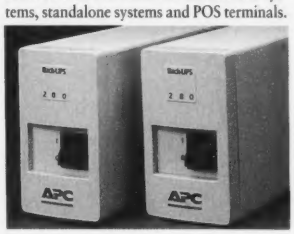
To deliver an advanced level of support to APC and Digital customers, Digital Multivendor Customer Services has been contracted as a service provider for all APC products. Digital is renowned for its strong field engineering force with coverage throughout the world. This additional coverage joins hundreds of APC reseller service partners already providing on-site service, giving APC one of the largest service organizations in the UPS category.

New Back-UPS start at $119



APC's new Back-UPS 200 and 280 models offer the most cost-effective UPS solution to power problems, priced at $119 and $139 respectively, and the most reliable choice for workstations, standalone PC's, internet devices, POS, telecom equipment and more. The units offer the industry's best price/performance at just $0.59 and $0.49 per VA.

In addition, the trend toward energy efficient "green" PC's lowers the power requirements because "green" PC's draw less power. As a result, a smaller, more efficient UPS may be utilized, further increasing the cost-effectiveness of UPS protection. The new Back-UPS 200 is ideal for these energy efficient PC's, and network workstations while the Back-UPS 280 is sized for multimedia systems, standalone systems and POS terminals.



HP names APC as key partner

APC's PowerNet SNMP Manager for HP OpenView has successfully passed extensive testing in HP's OpenView testing labs, making APC the only UPS vendor certified as an HP OpenView Premier Solution Partner.

APC's PowerNet SNMP Manager for HP OpenView is a graphical power management application that is fully integrated with HP OpenView. The PowerNet SNMP Manager collects UPS/power information from APC Smart-UPS and Matrix-UPS via PowerNet SNMP Adapters and PowerNet SNMP Agents and then graphically displays that information on an SNMP-based management station. Power problems that generate alarms (traps) anywhere in the enterprise can be reported to one or more central HP OpenView management station.

"We are very pleased to see industry leaders such as American Power Conversion becoming HP OpenView Premier Solution Partners," said Robert Hoog, General Manager, Network & Systems Management Division, Hewlett-Packard. "APC has worked with HP to provide customers with the peace of mind that comes from HP OpenView Certified Applications. The remote power management and diagnostics provided by APC's integrated PowerNet Manager is a valuable tool for an administrator using HP OpenView."

Call APC at 1.800.800.4APC Fax to 401.789.3710 FaxBack service: 1.800.347.FAXX Compuserve: GO APCSUPPORT Internet: apctech@apcc.com

PowerManager™ wins rave reviews



"Have you looked under your desk recently?" *PC World* editor Steve Bass, asks his readers.

"If it looks like Olivia de Havilland's nightmare in *The Snake Pit*, it's time you rounded up that mass of coils with APC's PowerManager."

When it comes to eliminating the threat of the congested work area and cleaning up that mass of computer cords behind your desk, the editors and users alike have touted APC's PowerManager as the ultimate solution for protection and convenience.

David Jacobs, *WIRED* editor, refers to the PowerManager as a "tangle tamer" and writes in his Fetish column, "I can't handle all these extension cords sticking out of every box I own. I'm always tripping over them and they're ugly as all getout. I'm going to clean up my act with the PowerManager...."

PowerManager fits under your monitor without taking up coveted desk space, helps you avoid coil snarl and provides high-performance surge protection and power control for up to five computer devices. The cover slides back to safely and neatly store equipment power cords.

PowerManager also has a customizable front panel that can be tailored to the user's system configuration and a convenient outlet on the side of the console which eliminates the inconvenience of finding an outlet for daily needs such as charging laptop computers, tape backup and other desktop needs. PowerManager with TEL (POW6T) includes 2-line (4-wire) telephone protection with RJ11/RJ45 jacks, preventing spikes and surges from reaching your modem, fax, answering machine, and telex equipment via phone lines.



This sleek, graphite-gray, slim-line product fits right under your computer monitor and is ideal for multimedia, desktop publishing, home office, small business, as well as other PC applications.

ComputerLife, one of the newest computer magazines geared towards the small office/home office users, also beseeches its readers to "Avoid Power-Tripping."

The editor "simply abhors those unsightly cables coiling like snakes beneath the computer table, attracting dust mice, and barricading the broom. Cords from the CPU, monitor, printer, CD drive, modem, and cassette deck make a mess—until PowerManager slides into place..."

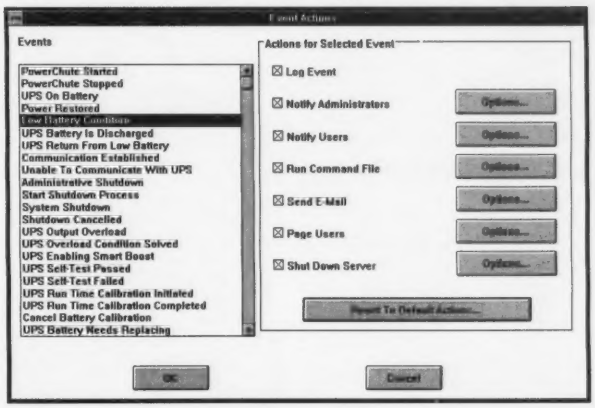
PowerManager has also been praised in *Home Office Computing*, *Computer Life*, *Playboy*, *HomePC*, as well as featured in Corky Pollan's Best Bets in *New York Magazine*, *Twice*, and *Multi-Media World*.

New PowerChute® *plus*: Anytime, anyplace, any OS



APC's software development team has released version 4.2 of PowerChute UPS shutdown and power management software, which promises new levels of management and control.

PowerChute works 24 hours a day, whether you're there or not. Whether your network stretches across a desk or a desert, PowerChute provides comprehensive power management and safe shutdowns.



Any OS...

PowerChute supports more operating systems than any other UPS monitoring solution, so you can be sure of complete compatibility. Version 4.2 now features a windowed interface on all our platforms for ease of use and ease of training (it looks hot too!). Common application code also means better reliability and quick response.

New FlexEvents!

PowerChute plus 4.2 also includes new FlexEvents (tm). With FlexEvents the user has the option of choosing one or more items from a list of seven possible actions for each event. FlexEvents allows the network administrator to log PowerChute events, notify the administrator or all users of an event. A command file can also be executed. FlexEvents also allows paging or sending of an email. The administrator can even shutdown the server. Customizing actions to events allows administrators to plan for and control crisis situations before they impact uptime or threaten data.

Version 4.2 is now shipping for NT, Novell, SGI, HP-UX, and OS/2. Call (800) 800-4APC for a free demo disk!

FLEX EVENTS
Available now on PowerChute plus

Matrix-UPS touted for telecom...



Ricard International Inc. (RII) is contracted by many large corporate and government clients to answer 800 number questions for the public, and/or to send out literature. Their Northern Telecom PBX equipment supports 150 phones. Before opting for a Matrix-UPS 5000 for the telecom system, LAN Administrator Chris Everett had used several smaller APC units on his network. "When the time came to find protection for our phones, we were looking at Best Power and APC. We chose APC because we have had good experience with the products in the past, and APC is held in high regard in the power industry."

APC SATISFIED CUSTOMER

"We have had good experience with the products in the past, and APC is held in high regard in the power industry..."

Chris Everett, LAN Administrator, RII International

Workstation protection key at Blue Cross/BS

When Skip Seefried, MSIS Sr. Network Analyst, Blue Cross/ Blue Shield of Florida, discovered his network was not grounded properly, he traded up from a Back-UPS on his server to a Smart-UPS and PowerChute in order to track and prove any power problems he may come across in another areas. Back-UPS made a great fit for his workstations.

"We really like PowerChute plus," said Seefried,"Now we use. Back-UPS 400's on workstations that are talking to the Smart-UPS protected Novell databases. If we lose connection from the workstation, things don't run properly so they need protection too.."



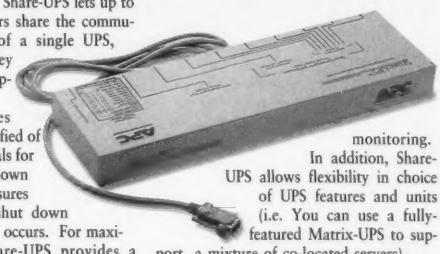
APC SATISFIED CUSTOMER

"We really like PowerChute PLUS. Workstations...need protection too"

Skip Seefried, MSIS Sr. Network Analyst Blue Cross/Blue Shield of Florida

Share-UPS for multiple OS sites

APC's new Share-UPS lets up to eight servers share the communications of a single UPS, even if they are running different operating systems.



Share-UPS ensures that all servers are notified of a power problem, signals for initiate graceful shut down of all servers, then ensures that all servers are shut down before UPS shut down occurs. For maximum reliability, Share-UPS provides a hardwired connection to each server.

Share-UPS also provides users of multiple servers in one location easier power management by providing one interface for UPS status, UPS control and environmental monitoring.

In addition, Share-UPS allows flexibility in choice of UPS features and units (i.e. You can use a fully-featured Matrix-UPS to support a mixture of co-located servers)

The unit provides expanded out of band communications via a modem/ terminal port for: remote turn on turn off of UPS, Pager notification and remote reading of UPS status.

Smart-UPS take French awards

APC Smart-UPS were recently put to the test by *Le Monde Informatique*, and L'info PC, two leading French magazines, in comparison test of UPSes for networks.

The APC Smart-UPS 600 was voted "Labs Choice" over five notable European competitors. The editors of *Le Monde Informatique* concluded, "The Smart-UPS 600 from APC represents the best solution for protection of a network..."

A few weeks later, the Smart-UPS 600 earned "Editors Choice" from *L'info PC*. For more information, call 1-800-800-4APC.

INFORMATIQUE *"la meilleure solution pour proteger un reseau..."*

INFO'PC *"Choix de la Rédaction"*

Call APC at 1.800.800.4APC Fax to 401.789.3710 FaxBack service: 1.800.347.FAXX Compuserve: GO APCSUPPORT Internet: apctech@apcc.com

APC Power Audits solve mystery

Although their touch screen terminals were protected with APC UPS systems, problems persisted at two well-known restaurant chains. The touch screen terminals feed information to a central CPU which distributes drink and food orders to remote bar and kitchen printers. Both sites were experiencing massive failure of both the printers and the processing cards in the central CPU.

"That's where we came in," said APC's Bob Brook, who arranged for APCs first power audit. Both sites had extremely poor grounding and gaps in protection.

"We made configurational changes in their wiring," said Brook. "However, after a short time it became apparent that this had no significant effect on their problem."

"At this point, we decided to duplicate a restaurant computer configuration in our R&D labs and attempt to duplicate their damage. With the help of our engineers, we were able to determine that a communication problem existed between the CPU cards and the remote printers. In essence, an 11 volt spike coupled into the transmit pin on the printer would kill the card in the central CPU.

"We then able to demonstrated that our new ProtectNets would totally eliminate this problem and make both the cards and printers immune to 2000 volt spikes," he said.

"Our first recommendation was to employ DB-9 ProtectNets on the CPU side of the communication cable. To achieve a more cost effective solution for the customer, we also worked directly with the manufacturer of the printers to recommend incorporating better surge protection into their units."

To learn more about APC's Power Audit program, call 1-800-800-4APC, ex. 2138.

PC World: "SurgeArrest suits SOHO"

Leading computer magazine *PCWorld* recently gave a blank check, literally, to find the best equipment for a Small office/home office (SOHO).

"Check in hand, two computer mavens with thriving home offices were asked to shop around, do some research, wheel and deal and when done pick out one dream home office for $2,500..."

"After wearing out my shoe leather, I'd narrowed my choice to a few systems that met my ground rules... Each was equipped with an APC power suppressor, which guards the system and the telephone line to the modem and backs up its promised surge protection with a $25,000 insurance policy."

The "on-line" sham

PCWeek exposes dubious derring do



Due to popular demand, APC has begun its new Hype Awards series. We'll point out the marketspeak, technical claims and definitions which may not only conveniently overlook the truth, but also often defy the laws of physics. Best of all, you can get a free T-shirt by sending in your vote! Do it today, and help us halt the hype.

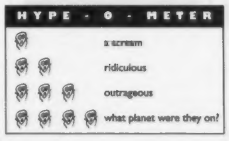
Not surprisingly, the trade press has warned readers about Exide's "bait and no-switch." In a column appropriately called "Reality Check: Where are the UPS police when you need them?" *PCWeek* warns its readers about Exide's attempt to get a 25% price premium for supposed benefits that do not really exist. As *PCWeek says* **"...Study the fine print and block diagrams before assuming that you and your salesperson's definition of on-line are one and the same..."**

Here's the rub: Exide claims to offer "true on-line performance," conveniently overlooking their clearly visible transfer switch. In a "true" on-line design the batteries are always in the prime current path and are not switched in and out. This is not the case with the Exide Prestige, despite Exide's claims. (For an experiment, see APC Lab Report #86.)

Moreover, Exide offers other claims of "superior" performance which are based on non-standard tests of Exide's own design. Why? Because on industry-standard tests (such as those from IEEE), Exide demonstrates no advantage. (For more, see APC Lab Report #87.)

Exide also claims their "on-line" design is much more reliable than anything APC offers. Again, independent parties disagree. PC Magazine MagNet asked its users which vendor made the most reliable UPS...APC won 12 times as many votes as Exide! Another independent study ("AC-UPS Reliability and Availability Performance: Comparison of Available Solutions": Sunito, Uusitalo, and Jonsson) showed that using standby UPS or line-interactive systems reduced downtime more than twice as much as using an on-line. In addition, the Mean Time Between Failures (MTBF) over a 10 year period for a standby UPS and line-interactive UPS was twice that of an on-line.

In another questionable demo, Exide states that they can remain on-line down to 55 Volts. However, Exide fails to state that there was NO LOAD on the UPS during this demo. In fact, their own official specification for minimum input voltage under load is actually 85 Volts. Furthermore they fail to state that protracted 55 Volt brown outs are extremely unlikely to occur since utility transformers will self destruct with 55 Volt operation. In other words they claim a benefit which is not really available and would have no practical application even if it were.



What do you think? Send us your vote on the Hype-o-Meter by fax at (401)-789-3710, attn: Martha Badigian. Free T-shirts to the first 25 voters. Call- 1-800-800-4APC for a reprint of the PCWeek *article.*

Back-UPS® for back doc



Chiropractor Dr. Evon Barvinchack Pennsylvania office is plagued with chronic poor power, and several times their electronic phones needed new circuit boards at $300-$400 after each power incident. In desperation he turned to an APC Back-UPS for protection.

"That was two years ago and we've been completely protected since then," he said. "We also choose a Smart-UPS 600 and PowerChute *plus* on our server. PowerChute has kept a record of all the continued power problems that we're no longer subject to."

During one serious winter storm, the power went down. According to Barvinchack, the Back-UPS 250 kept the phone system up for more than 45 minutes, during which the office continued to receive calls and faxes and the Smart-UPS 600 ran their server.

"Later, the phone company called saying that because of a large power surge that was passed through the line when a fuse blew during the outage, they were calling to schedule phone repairs," he said. "It gave me pleasure to tell them that this time repairs would not be necessary!"

"The Back-UPS provided great value," said Barvinchack. "For a small business, keeping your phone system up and running keeps you in business."

APC SATISFIED CUSTOMER

"The Back-UPS provided great value..."



Dr. Evon Barvinchack

APC tech support called tops by users



The General Electric Plant at Erie, PA manufactures locomotives, and is so large that it has its own zip code and its own power generating plant with 4-5 big steam turbines. While Bill Blair, Manager of Manufacturing Technology and Plant Support, uses APC products throughout the plant. These include APC Smart-UPS, Matrix-UPS, PowerChute PLUS, and the PowerNet SNMP Adapter.

Blair recently got a chance to see APC's tech-support in action at a time when most of us are tucked safely asleep.

"We needed some help at 2:00 am," said Blair, who figured his chances were about as good as outrunning one of his company's locomotives. "Not only was I able to reach someone, but they got right to work and were able to help us immediately!"

His conclusion: "You have a good product, and almost as important, you back it up 100%. We have probably used almost every other brand of UPS in the past, but for the past 5 or 6 six years we have pretty much standardized on APC. You really have a good thing going."

"It is uncommon, especially in the past few years, to get good tech support. The APC tech support team has been one of the few exceptions to this," he concluded.

Happy customers top priority

Roy Thomassen, MIS Support Applied Materials also got a chance to test tech with APC. He wrote the following: "I am very impressed with the service that APC provides its customers. I called your support line at about noon, California time [3 p.m. APC time]. I was calling to order a replacement cable for the APC UPS. This cable had been misplaced by Applied Materials. The Inside Sales Engineer was extremely helpful, and informed me that the cable was in stock. Due to the time of day, he could not confirm that the order would ship that day.

Two days later, a package arrived via Federal Express. Inside were two things: the cable I ordered, and a letter that explained that due to the end of the month shipping crunch, he could not guarantee that the order could be delivered on time, so he got authorization to ship the cable at no charge.

The bottom line is that the cable got here on time, and I am a very happy customer. Our group is now soliciting bids on another file server, including another UPS. You can be sure that we will specify APC as the preferred vendor for this, and future purchases."

APC SATISFIED CUSTOMER

"It is a pleasure to deal with a company that offers such outstanding support..."

Drew F. Utton , Network Coordinator, American General Life Insurance of New York

Redefining high-tech tech support standards

Drew F. Utton also wrote: "As the Network Coordinator for American General Life Insurance of New York, I have many opportunities to speak with technical support staff from many software and hardware companies. All too often, I dread the experience, particularly when I know that I am asking for support that is beyond the normal bounds of customer service. But that has never been true of American Power's support, especially in regard to the assistance a few weeks ago.

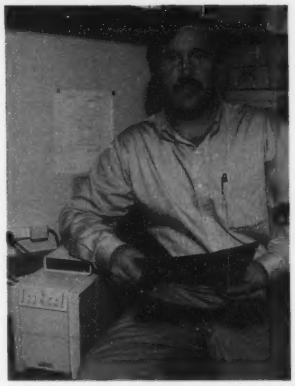
[Tech support] was helpful, polite and very creative...You located an APC distributor for us on a weekend and without any notice, began the arrangements that lead to the arrival of a special voltage Smart-UPS 2000 here the next day.

We expect to continue to purchase your products in the future. In fact, it is a pleasure to deal with a company that offers such outstanding support."

Solving problems: Our place or yours...

Kathleen Dell'Orto, Chief Foreign Documents Division at the US Dept. of Commerce writes: "To commend [an] extraordinary level of customer service... I originally called on the recommendation of a vendor because we had been experiencing electrical problems on our LAN despite our APC UPS devices. [Tech support] first gave me the introductory course on typical electrical wiring problems, with special emphasis on leased government buildings. They then were kind enough to send me a line analyzer and walk me though its use over the telephone. With the device, I was able to detect a number of serious deficiencies which may just be the tip of the iceberg. In any case, the building management is now being asked to test the wiring of the building in great detail and fix what is clearly broken.

I am convinced that American Power is synonymous with excellence and high standards of customer support. Many thanks."



APC SATISFIED CUSTOMER

"It is uncommon...to get good tech support. APC has been one of the few exceptions to this..."

Bill Blair, Manager of Manufacturing Technology and Plant Support, General Electric

Big or small, support stands tall

Werner G. Neubauer, Phd., a home office user, also wrote regarding his experiences with APC: "Lightning caused the damage (and in some cases ruin) of my computer, three TVs, one VCR and one radio. The computer was on a Back-UPS 400. I called APC and put the computer in for evaluation and/or repair. Even before I got the computer back, a replacement Back-UPS 400 arrived.

As it turned out, the computer was damaged through the telephone line...modem and parallel port destroyed. I should have had my phone line protected with one of your units! The Back-UPS 400 seems to have done its job.

Anyhow, thank you and your company for a really great product and an excellent response team to support it. I have recommended the Back-UPS to several people with computers and will continue to do so."

You can reach APC tech support by phone, fax or on line. Try our CompuServe forum at GO APCSUPPORT or via the Internet: apctech @apcc.com.

One-stop shop...

Continued from page 1...

This eliminates the necessity of a terminal emulator for configuration. The UPS Interface Expander offers the ability to communicate to three servers from one UPS reducing cord clutter and cost. Other feature enhancements include:

Intelligent Battery Management system means longer battery life. Improved reliability results from a high precision **FastCharge**™ battery charge system, with automatic true-load battery tests that recharges batteries 75% faster than other brands. Redundant overcharge protection and continuous, non-pulsed charging are other battery life enhancements provided by the Intelligent Battery Management system. Batteries last longer, and warning is provided *before* batteries wear out.

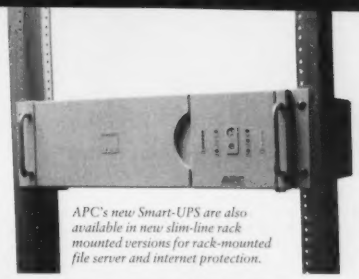
QuickSwap™ Hot swappable user replaceable batteries maximize uptime. User replaceable batteries can be easily and quickly swapped out without powering down the connected load. Battery replacement can be performed in under 60 seconds. Replacement battery kits ship in a reusable box for convenient and proper disposal of exhausted batteries to a recycling center.

SmartTrim™ corrects overvoltage conditions and allows the user to work through overvoltages without unnecessary battery drain by "stepping down" high voltages to output that is safe for the system. Instead of forcing you to exit your application when a conventional UPSes batteries run out during an overvoltage, new Smart-UPS keep you productive.

Corporate users will also appreciate the change to a consistent user interface, decreasing support and training issues. New versions are currently available in 700, 1400, 1400 rackmount, and 3000 Volt-Amps. US list pricing is $549, $969, $1189, and $2599 respectively. Part numbers for the enhanced Smart-UPS begin with "SU" instead of "AP."

New Back-UPS PRO: Performance Power Protection for Advanced Workstations

To better serve our customers' needs, we've also added new levels of protection to our best-selling Back-UPS line to suit high-end workstation use. The performance Back-UPS PRO



APC's new Smart-UPS are also available in new slim-line rack mounted versions for rack-mounted file server and internet protection.

series features a line interactive design for better performance and integrated Automatic Voltage Regulation(AVR). AVR protection maximizes backup time and extends battery service life by saving battery power for extended outages.

The PRO series includes integrated fax/modem and network cable surge protection. This prevents back-door surges from damaging the system via the phone line or network cable.



New Back-UPS PRO and Smart-UPS v/s offer integrated fax/modem/ network surge protection.

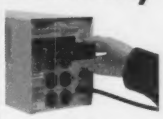
Other benefits include: **Intelligent Battery Management, User Replaceable Hot Swappable Batteries, Unit Diagnostics, Communications Interface Port and more.** Models 280, 420, and 650 will ship **in December with US list prices of $199, $299, and $399** respectively. Part numbers begin with "BP."

New Smart-UPS v/s (Value Server) optimized for small business networks

For departmental and small business networks which may not need full power management capabilities, APC now offers the Smart-UPS v/s. The v/s series offers a Smart-UPS feature set optimized for small networks at an economical price. The units ship with a special version of APC's PowerChute software included right in the box for maximum convenience.

New versions are currently available in 420 and 650 Volt-Amps. US list pricing is $349, and $429 respectively. Part numbers for the Smart-UPS v/s line begin with "SUVS."

SmartSlots™ offer full flexibility



APC's SmartSlot accessories plug directly into your NEW APC Smart-UPS. SmartSlots become an integral part of the UPS, getting power from the UPS (even when the UPS is in "sleep mode"). Choose from:

- ***UPS Interface Expander** - Provides two additional ports to facilitate safe system shutdown and advanced UPS management of up to three different OS servers from one UPS.*
- ***PowerNet SNMP Adapter** - 10 Base-T Ethernet adapter makes your UPS "SNMP manageable" from your NMS. Server connections are also maintained for local management.*
- ***Remote UPS Management Device** - remotely manage your UPS via modem. Get complete UPS information, paging on power problems and remote safe reboot of servers via user supplied modem. The SmartSlot Remote UPS Management Device offers all of the features of Call-UPS II integrated into your UPS via SmartSlot.*



BEST VALUE POWER PROTECTION FOR PC WORKSTATIONS
For Compaq Presario, IBM ValuePoint and equivalent 386 and 486 PC workstations



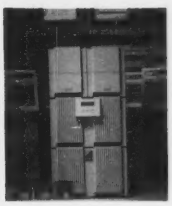
PERFORMANCE PROTECTION FOR ADVANCED WORKSTATIONS
For SUN, HP, SG, IBM RISC, NT, PowerMac workstations



BEST VALUE SERVER PROTECTION FOR SMALL BUSINESS NETWORKS
For Prolinea and equivalent small or department servers



PERFORMANCE POWERMANAGEMENT FOR ADVANCED BUSINESSNETWORKS
For Proliant, IBM PC 55, Alpha, equivalent servers



ADVANCED MODULAR PROTECTION FOR DATACENTERS
For AS/400, HP9000, VAX, NetFrame and equivalent

Software capability key:

- =*Simple signaling*
- =*Serial signaling*
- =*Enhanced serial and SNMP*

Performance and price increase from left-right. APC offers perfect protection for every application.

APPLICATION	VALUE	PERFORMANCE	HI-PERFORMANCE
WORKSTATIONS	BACK-UPS	BACK-UPS PRO	SMART-UPS
SERVERS	SMART-UPS v/s	SMART-UPS	MATRIX-UPS
DATACENTERS	--	SMART-UPS	MATRIX-UPS

BULLETPROOF

Introducing the latest additions to th

We've just introduced a host of new ways to benefit from APC's award-winning reliability. With solutions from surge protectors through midrange UPS systems to protect anything from a basic PC to the most advanced superserver, APC is your one-stop shop for reliable power protection. Call today for a more information on our new, enhanced product line of "bulletproof" protection!

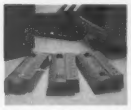


Back-UPS®



Back-UPS® Pro™

Use APC's new UPSs with our other award-winning products and accessories...



SurgeArrest® AC surge suppressors...



New ProtectNet™ data line surge suppressors...



Accessories including Measure-UPS™, Call-UPS™ II and Share-UPS™...



PowerManager™ power control centers...

BEST VALUE POWER PROTECTION FOR PC WORKSTATIONS

Use with Compaq Presario, IBM ValuePoint and equivalent 386 and 486 PC workstations

SIMPLE SIGNALING

- Unmatched surge and lightning protection for maximum hardware safety
- Site diagnostics automatically spot missing ground and reversed polarity
- LAN signaling allows simple shutdown with interface kits (400 and above)
- User replaceable, hot-swappable batteries insure uptime safe disposal
- $25,000 lifetime Equipment Protection
- Available in 200, 280, 400, 600, 900, 1250 Volt-Amps. Starting at $119 list.

PERFORMANCE PROTECTION FOR ADVANCED UNIX WORKSTATIONS

Use with SUN, HP, Silicon Graphics, IBM RISC 6000, and UNIX workstations

SIMPLE SIGNALING

All the protection of Back-UPS, plus:

- Automatic voltage regulation provides enhanced protection against long duration brownouts and overvoltages
- Built-in network card/modem surge protection for maximum system integrity
- Intelligent Battery Management extends battery life and increases runtime
- Line-interactive design for better performance and reliability
- Available in 280, 420, 650 Volt-Amps. Starting at $199 list.

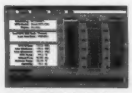
KEY:

Performance, price increase left to right

APC Exclusive: Use to differentiate from competitors

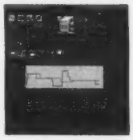
Software capability rating (1 good-3 best)

Simple signaling provides safe shutdown in the event of an extended power loss. APC offers the industry's widest selection of kits, including PowerChute.



Serial signaling allows UPS queries, and data logging and analysis. PowerChute v/s offers serial signaling.

Enhanced serial signaling and SNMP management allow full wide-area control, such as PowerChute PLUS and PowerNet.



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PROTECTION

e world's best-selling UPS protection



Smart-UPS® v/s™

BEST VALUE SERVER PROTECTION FOR SMALL BUSINESS NETWORKS

Use with PS/2, Dell, ProLinea and equivalent small business or department servers

SERIAL SIGNALING

All the protection of Back-UPS Pro, plus:

- Serial communication for enhanced network shutdown and control. Allows power quality event log, scheduling and UPS self-test.
- Ships with PowerChute v/s software for maximum reliability and convenience
- Available in 420, 650 Volt-Amps. Starting at $349 list.



Smart-UPS®

PERFORMANCE POWER MANAGEMENT FOR ADV'NC'D BUSINESS NETWORKS

Use with Proliant, IBM PC 55, Alpha and equivalent servers and internet devices

ENHANCED SERIAL SIGNALING & SNMP MANAGEABLE

All the protection of Smart-UPS v/s, plus:

- Software configurable features
- SmartSlots for SNMP manageability means wide-area reliability and uptime
- Full sine wave output
- Supports APC monitoring accessories, such as Share-UPS, Measure-UPS, Call-UPS and more.
- Rackmount and extended run models
- Available in 250, 400, 700, 900, 1400, 2000, 3000 Volt-Amps. Starting at $299.



Matrix-UPS™

ADVANCED MODULAR PROTECTION FOR DATACENTERS

Use with AS/400, HP9000, VAX, NetFrame and equivalent minis-servers

All the protection of Smart-UPS, plus:

- Modular hot-swappable design for 100% uptime
- Add runtime quickly and easily with microprocessor-controlled SmartCells
- 60% lower lifecycle costs than comparable brands.
- Available in 3000 and 5000 Volt-Amps. Starting at $3499 list.

Solutions to suit any application

APPLICATION	VALUE	PERFORMANCE	HI-PERFORMANCE
WORKSTATIONS	BACK-UPS	BACK-UPS PRO	SMART-UPS
SERVERS	SMART-UPS v/s	SMART-UPS	MATRIX-UPS
DATACENTERS	–	SMART-UPS	MATRIX-UPS

APC™

AMERICAN POWER CONVERSION

800-800-4APC

New ProtectNet tops expert tips for bulletproof network protection



Did you know electrical transients can be conducted by any long cable connected to your computer, LAN or home entertainment equipment? Experts suggest the following tips to ensure full protection.

1. Use an APC UPS or surge suppressor product to protect all AC operated system equipment. APC offers power protection solutions at all performance grades, suitable for any budget. This eliminates AC-carried transients from reaching your equipment.

2. Verify that your outlets are properly wired. Even though equipment appears to operate properly under normal conditions, operating your computer equipment from mis-wired outlets can become a shock hazard.

First, verify that the protected equipment is plugged into a three-wire grounded outlet. If your site has outlets with only two holes (no center ground hole or contact wiper), a qualified electrician should be called to upgrade your building wiring. Do not attempt to add auxiliary ground conductors to your equipment or building.

All 120 Vac APC UPSes and surge suppressor products offer a Site Wiring Fault indicator that warns of improper building wiring, including lack of a safety ground. Though not as sensitive as APC equipment, an outlet wiring tester can be purchased at most hardware stores.

3. Where possible, plug all power protection and/or system equipment line cords in at the same service branch. This means that power to all equipment is controlled by the same building fuse or circuit breaker.

4. Serial RS-232 interface ports on computers, terminals, printers, plotters and modems are especially sensitive to damage from electrical transients because they use the computer chassis ground as a signal common. Protect both ends of an RS-232 serial cable longer than 5 feet (1.5 m). Protect the 25 or 9 pin port of your computer or terminal with an APC ProtectNet model PS25-DTE or PS9-DTE. Protect the 25 or 9 pin port of your modem, printer and plotter with an APC ProtectNet model PS25-DCE or PS9-DCE. Do not attempt to run RS-232 links between equipment in separate buildings - use quality short haul modems for this purpose.

5. Use an APC ProtectNet model P10BT or P10B2 to protect your Ethernet Network Interface Cards and other LAN equipment at each end of your networks 10Base-T UTP, or coaxial Thinnet cable. Thinnet (10Base2) networks are especially susceptible to intersystem ground noise when the cable shields are inadvertently grounded at more than one location. Verify your system's true single ground point and check to be sure that "T" connectors or any exposed connector barrels are not touching the metal chassis of your computer.

6. Use an APC ProtectNet model PTR to protect your 4 and 16 Mbps Token Ring Network Interface Cards and other LAN equipment at each end of your networks UTP cable.

7. Protect the telephone port of your modem, fax, telex, answering machine, etc. from damage due to nearby lightning activity with an APC ProtectNet model PTel2 or SurgeArrest with telephone protection. Protect each telephone line wire pair.

8. Protect the RF video input of your television or your computer's "TV board" with an APC SurgeArrest with CATV surge suppression.

9. It is not necessary to protect modern keyboards. Computer monitors require no video cable protection when the monitor is plugged into the same utility service branch as the computer.

Introducing ProtectNet™!



Data line surges make up an overwhelming majority of all surge induced damages where the equipment was thought to be already protected but had a "back door" such as a modem line unprotected. Network interface cards, in particular, can be destroyed by relatively mild spikes.

According to Ethernet standards (IEEE 802.3), non-AC network electrical hazards include: Direct contact between components and power or lightning circuits, static charge build-up on cables and component, high-energy transients coupled onto the local cabling system (those induced by other cables which are installed in the general proximity of network cables or lightning within a mile radius) and potential differences (even from building to building, between safety grounds to which various network components are connected.)

For these reasons, APC now offers ProtectNet, comprehensive data line surge and lightning protection for LAN, PCs, and home office equipment. The new ProtectNet family stand-alone modules offer surge protection for Network Interface Cards, Serial Ports and Telephone (fax, modem) applications. ProtectNet stops all data line surges from damaging any sensitive computer equipment so customers can "bulletproof" their system.

Starting at less than $40, the ProtectNet family offers models for Network Port, Serial Port, and Telephone/Modem protection. Products include Telephone, 10BaseT, Token Ring, 10Base2, and 9 and 25-pin serial. Serial products also come in DTE and DCE versions.

In conjunction with the launch of ProtectNet, APC now offers a new "Double-Up!" warranty program. APC will **double** the Equipment Protection Policy to $50,000 for those installations made "bulletproof" by APC UPS and ProtectNet products. For instance, when ProtectNet is used with an APC Smart-UPS, the recoverable limits of the UPS's Lifetime Equipment Protection is doubled up from $25,000 to $50,000.



APC's new ProtectNet surge suppressors are designed to keep non-AC data lines free from damaging surges.

More power to SmartCells



APC has announced an extended run (XR) SmartCell battery pack for the Matrix-UPS. Designed for hassle-free extended runtime for applications such as telecommunications equipment, the new SmartCell XR battery pack provides the same intelligence and functionality but four times the run time of a standard SmartCell.

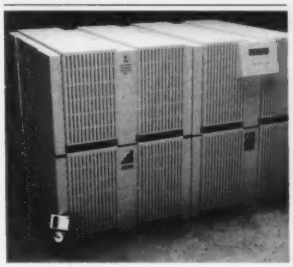
Each SmartCell XR is microprocessor-controlled and automatically monitors the operation of the battery, reports the pack's status back to the Matrix-UPS and alerts the system manager of any irregularities. Replace SmartCell XR warnings are delivered via the front control panel, via local alerts on each SmartCell, and via software.

In many UPS products, the batteries are connected in series: when one battery fails all are rendered useless, often without warning. Replacing a dead battery often means replacing the whole battery string.

In contrast, Matrix' SmartCell XR battery packs are connected in parallel for maximum security. If a SmartCell XR needs replacing, users can simply disconnect the failed batteries and replace them with new ones, a simple process which is dramatically less expensive than replacing an entire string of batteries.

The SmartCell XR is now shipping. For more details call 1-800-800-4APC.

The new SmartCell XR battery pack provides four times the run time of a standard SmartCell...



APC christens new European manufacturing facility



APC has begun operations in its new European manufacturing facility. The plant, formerly used by DEC manufacturing, will allow APC to deliver even more reliable product even faster to the company's European customers. Located in Galway, Ireland, the plant is expected to be fully on-line in Q4, 1994.

Synoptics, Banyan give nod to APC

Working with BANYAN

Networking OS vendor Banyan has recognized APC UPS compatibility with their VINES and ENS environments. APC offers by far the widest range of power protection equipment specifically approved for Banyan sites.

Internetworking vendor SynOptics has also certified APC UPS systems and PowerNet SNMP accessories for use with SynOptics LattisSphere Intelligent Hubs.

"...a combination of APC's UPS products and SynOptics LattisSphere solutions will offer additional reliability in our customers' data networks...," the company said when announcing the certification.

SynOptics APPROVED

Upgraded Call-UPS in action





APC now offers Call-UPS *II*, a remote management device that allows users to monitor and control APC Smart-UPS and Matrix-UPS via a modem link. Now managers can monitor their remote power environment by communicating UPS status, power line information and environmental conditions via modem. In addition, network managers can control their APC UPSs remotely by running UPS tests, changing UPS internal settings, remotely configuring the Call-UPS *II* itself and safely rebooting "locked-up" remote servers.

"Many managers need to be able to monitor the power environment of their remote systems, but haven't implemented an SNMP based network management scheme yet. Call-UPS *II* allows them to do this, and later provide important out-of-band management capabilities for expansion into SNMP," said Chris Mather, Networking Business Unit Manager.

Call-UPS *II* has extensive paging capabilities for UPS/power problems. For instance Call-UPS *II* can dial up to 2 pagers to alert managers of any potential problems and issue error coded pages on power events. Paging is also fully configurable so the network manager decides who will get paged for which conditions.

Call-UPS *II* features a menu driven interface and can log a history of up to 63 events into memory such as low battery, UPS on battery, or any user activity. In addition, Call-UPS *II* provides on-line data logging capabilities for easy troubleshooting.

In order to ensure system security, Call-UPS *II* is password protected, and has a dial-back security option. The unit can share a phone line with another computer if necessary. Call-UPS *II* has a U.S. list price of $179 and is now shipping.

Point of sales protection is key concern for retail



Point of Sale systems are looking more and more like Local Area and Enterprise Wide Networks. The traditional cash Registers are looking more and more like PCs with attached cash drawers. Proprietary networks are changing to Unix and OS/2 based systems. It is not unusual anymore to see an IBM 4690 with an Epson printer, or an NCR 7450 with Telxon handheld scanners. While there has always been a need to protect cash registers from voltage fluctuations with line conditioners, as these devices become more dependent upon the uninterrupted flow of data from both the in-store processor and the host at corporate, full power and data protection at all critical links is mandatory. By utilizing the power protection solutions from APC, leading retailers across the globe are able to cash out customers through power disturbances and provide consistent power to their ISP, their VSAT, and their scanning devices.

In order to accurately determine the need for power protection at the Point of Sale, it is critical to be able to understand what type of power disturbances occur most frequently. A Bell Labs study concluded that 87% of all power disturbances came in the form of a power sag, or "brownout." A sag can starve a computer based POS device of the power it needs to function, causing frozen keyboards and unexpected system crashes with the end result being not only the loss or corruption of critical data, but also the dissatisfaction of the customer who now may have to return to accomplish their buying at a later date. Sags can also reduce the efficiency and life span of the electrical components within the POS devices as well.

APC products are designed to combat the real power problems our customers encounter on a daily basis. If you are new to power protection and are looking to protect your POS system properly, here's some straightforward steps to go over with your reseller.

1. Determine how long it would take to cash out existing customers upon a power failure.

2. Determine how many "emergency lanes" you need. Consider how each lane handles data and what happens to the integrity of that data upon power interruption. You may not need to protect every register in the store. For example, the IBM 468X Model 2 does not lose any data during a power disturbance, so a SurgeArrest or Line-R would be sufficient protection in most cases!

3. List all equipment at each lane. Focus on peripherals that require power to perform standard operations including scanners, scales, credit card and/or EFT terminals. Add up all the power requirements for that equipment.

4. List all equipment that interfaces with the lane such as in-store processors, modems, VSAT equipment, etc. Add up all the power requirements for that as well.

5. Choose from a distributed protection scheme or a consolidated scheme. The distributed scheme would put a smaller UPS on each piece of vital equipment where the consolidated approach would be to wire all the vital equipment to one large UPS. Each scheme has its advantages and each store will embrace a different philosophy, but in any event, APC has the most reliable solutions for each type.

6. Protect the whole path. Take into consideration the way each store communicates with the corporate head office. If there is a Wide Area Network linking all the stores together, then the Internetworking equipment would need protection as well. Ensure the UPS solution you choose has the SNMP functionality to allow remote diagnostics when





Keeping power civilized at CVS

The CVS chain is one of the Northeast's and Midatlantic's most popular neighborhood chains, totalling more than 1200 stores.

Jerry Madden, Director of MIS Operations, switched to APC after a test of several competitive units. Now APC units provide reliable protection on POS scanning devices, controller computers in the back room, POS terminals, and computers in the each store pharmacy. APC's PowerChute for UNIX rounds out the protection.

"We were interested in making sure that thunderstorms and power inconsistencies didn't pose a threat to our store operations," said Madden. "After organizing a comparative analysis, we switched all stores over to APC.

We have been running without power interruptions as an organization ever since that day."

there is no expert at each store.

7. Install UPS software. Ensure the UPS solution has the ability to properly shutdown and reboot your processors and controllers without the need for human intervention. This will enable store personnel to stay out of the back room and on the floor catering to your customers!

8. Contact your local APC reseller for assistance in determining which solutions may be best for you. Or you can call APC directly and speak to the world's finest customer service and technical support team the industry has to offer.

If you are familiar with power protection, you may want to review the following steps to ensure your POS system has not outgrown your protection.

1. Find out when you installed your current power protection. If it is three to five years old, you may want to consider APC's Trade-UPS and Swap-UPS programs.

2. Have you upgraded your POS system without upgrading your power protection? Your new system may have more power hungry PC based machines, more powerful scanning devices, a link to VSAT that was not there before, WAN connectivity that was not there before.

3. Review the new software options that are available with the latest operating systems. The last two years has seen a dramatic increase in operating system coverage for APC's award winning PowerChute Plus software family.

4. Review new products, such as APC's Share-UPS! If you have more than one controller at each location running different operating systems, you can now protect them with a single UPS and ensure shutdown of each controller. You could have as many as eight different controllers.

Call 1-800-800-4APC for more on POS protection.

In an ever increasing effort to better understand our customer's real power protection needs, APC is now an Associate Member of the National Retail Federation and the Association for Retail Technology Standards. These memberships continue our commitment to providing the world's best value in power protection!

NATIONAL RETAIL FEDERATION

New PowerNet™ for wide-area protection



With new PowerNet, you can manage the power to the enterprise network and reduce the downtime and anxiety caused by power failures. When the power for your entire data path is managed by PowerNet SNMP and the power fails, the network remains dependable. Users get answers to their questions. Management doesn't question your judgement. And everyone is confident that you're on top of the situation.

The PowerNet SNMP family of products gives you complete worldwide management of electrical power from the same management system used to monitor the enterprise network. With PowerNet, you are in control of the power to all network devices and can proactively manage UPSs at any network location. Whether the UPS system is located 20 feet away or 2,000 miles away, all UPS/power problems can now be graphically reported to a central NMS console for fast problem identification.

When power failures occur at any network location, PowerNet SNMP automatically sends alert messages to your NMS console. To make sure you are notified of power alerts, the NMS station can also ring your pager (available on NMS with paging system). No time is wasted waiting for users to call and notify you of power problems. To reduce support calls, broadcast messages are also sent to warn users of power failure and the time remaining before server shutdown.

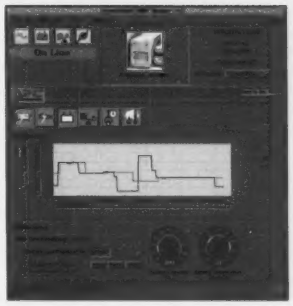
With the early warning and analysis tools of PowerNet, you can determine the answers to power-related support questions and resolve power problems right from your NMS station.

PowerNet eliminates the guess work by providing real-time answers to questions about battery runtime, server shutdown, UPS health, utility power status and environmental conditions (when used with APC Measure-UPS environmental monitoring device). With PowerNet, you no longer need to apologize for not having the answers when users call with power failure questions.

Of course, during an extended outage, PowerNet also shuts down servers safely. Many remote LAN's are unattended locally or are attended by untrained personnel.

During a power outage if the UPS system battery is drained before an operator can shut down the server gracefully, the server will crash as if no UPS were present. PowerNet SNMP ensures that all data is safely stored via a hardwired serial connection between the UPS and server, even if the server is unattended. Consequently, you don't have to race the clock to safely shutdown servers before UPS batteries run out. Nor do you have to instruct remote users over the phone on how to shut down servers properly.

Power! Net SNMP also maximizes uptime by monitoring all the UPSs on your entire network for proper operation. PowerNet scheduled UPS self



tests ensure that the UPS and its battery will keep a network device up and running whenever utility power fails. When there is a UPS problem such as weak batteries, discharged batteries or UPS overload, a trap or alarm is sent to your NMS station. Preventative maintenance can then be performed before network uptime is impacted.

The key to reducing network administration costs is the ability to manage a remote LAN without employing an on-site administrator or flying trained personnel to the site. For example, a server or hub on a far-off LAN has just crashed. Before you fly out a service technician, you would like to try restoring network service by rebooting the remote device. With PowerNet SNMP, you can reboot "locked-up" network devices, determine UPS status, diagnose power problems and configure UPS parameters from your NMS station, without paying for plane tickets or an on-site administrator.

PowerNet is standards-based management, offering SNMP MIB II compatibility with: SunNet Manager, HP OpenView, IBM NetView/6000, DEC NetView PolyCenter, Novell NMS, Cabletron Spectrum and others, including the IETF proposed UPS MIB standard.

PowerNet provides SNMP agents and the APC PowerNet SNMP MIB (management information base) which is compatible with the SNMP MIB II definition. This ensures compatibility with SNMP-based management systems. American Power Conversion is an active participant in the IETF Working Group that is defining the UPS MIB standard and currently supports the Proposed Standard.



Call 1-800-800-4APC today for your free Internetworking Protection Guide.

Sherlock's SURE thing

Last issue we began our tutorial on SURE UPS software. SURE stands for Safe shutdown, UPS Testing, Remote management, and Environmental monitoring, in short, all the benefits you'd expect from APC's PowerChute plus for local area protection and PowerNet for wide-area networks. After tackling the "S" last issue, we now delve into the "U."

We all know that in the complex world of network management, UPS preventative maintenance is often the last thing on the "to-do" list. You do not have time to walk from one UPS to another to initiate weekly UPS self-tests.

Scheduled tests for peace of mind

With software-scheduled UPS testing, you get automatic notification whenever a battery needs replacing or a UPS requires service. No more walking from one UPS to another to initiate the UPS self-test.

Replace warning stops "surprises"

This handy feature automatically alerts you to potential problems so weak batteries can be replaced before they wear out.

Real-time graphical display of UPS status for quick diagnosis

Check important operating data such as UPS status, battery runtime, load capacity and voltage to determine the health of the UPS at a glance. If necessary, preventative maintenance can then be performed.

Runtime meter prevents panic

Permits the user to quickly check the available runtime (in minutes or % of battery capacity) providing a gauge for determining when shutdown will occur.

UPS power event logging solves "mystery" problems

UPS status changes, power disturbances and environmental problems can be time-stamped and documented in both the standard server error log and the UPS power events log. Use the server log or UPS events log to diagnose UPS/power problems and perform corrective action before uptime is affected.

Next issue, we look at remote management. If you've missed part of the series, call 1-800-800-4APC for a free back issue.

Steve Tomasetti heads APC's tech support. In his alter-ego as Sherlock Ohms, he's happy to answer perplexing questions for the benefit of all APC readers. Fax them to 401-789-3710.



Real-time graphical display of UPS status
Look across the LAN at any UPS from your keyboard and check important operating data.

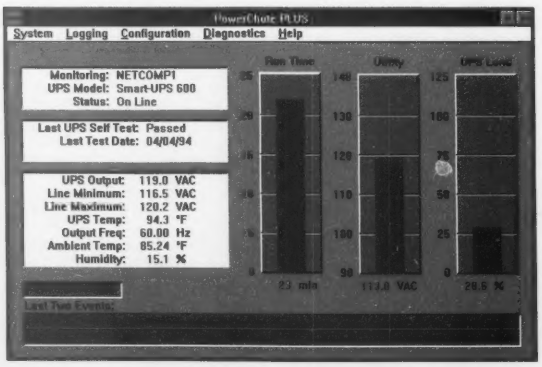
% UPS load - load capacity display ensures correct UPS sizing

UPS power events log records selected power events with a description and time/date stamp.

UPS temperature monitoring for proper UPS temperature to extend battery life

Battery runtime - minutes of battery time remaining for system use while on battery

UPS self test - unattended scheduled self tests warn of faulty UPS or weak battery



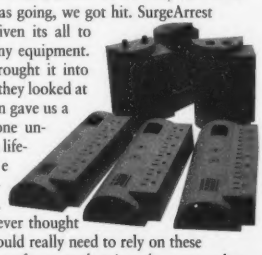


SurgeArrest saves key video



"With $45,000 worth of delicate equipment hanging out there, we chose SurgeArrest to protect our monitors and a rackmount Smart-UPS to provide continuous clean power to the video decks and computers," said Doug Wurzbacher.

"Not only is our equipment sensitive to power fluctuations, but if we lose a shot because of a power interruption, the job is a wash! At a recent conference, with three cameras going, we got hit. SurgeArrest had given its all to save my equipment. We brought it into APC, they looked at it, then gave us a new one under its lifetime guarantee. We never thought we would really need to rely on these products for more than just clean power but we could have lost our equipment which is our whole business right now."





APC has been awarded a five year GSA contract. The contract number is GS-07F-5343A. **Resellers who would like to sell from our GSA contract please call 1-800-788-2208 ex. 2139. Customers call 1-800-788-5414 for more info and a copy of APC's GSA Price List.**

MINDING the STORE?

CONTINUED FROM PAGE 103

sets Management Institute, Inc., a consulting firm in Rochester, N.Y.

Companies also lose out on valuable cost savings that accrue from an enterprise asset management program. For example, negotiating discounts from vendors on volume hardware and software purchases and support purchases depends on knowing what you have and where.

But finding out what you have and who's using it can be very difficult politically, as companies that have tried grappling with the problem of asset management have learned.

At Nissan, Wride says it was PC management costs, as projected by Gartner Group's numbers, coupled with an explosive growth in portable computers that prompted a cross-functional team to develop and begin implementing a seven-step asset management process.

Playing a central role in that process are standards, which IS is able to enforce as part of the purchasing process. "We have a pretty homogeneous set of hardware and software out there [because] all acquisitions must go through the IS department," Wride says.

"The tough news," Wride adds, "is that we haven't done a rigorous job" in tracking each asset.

"In the last three years, the number of remote terminals has just skyrocketed. Four years ago, we had no laptops. Today we have over 200. The kinds and number of software packages on PCs and laptops has also doubled," Wride says.

To try to remedy the problem, Nissan's asset management process calls for categorizing and tracking PC users as well as the PCs themselves. Knowing how workers are using PCs also enables IS to anticipate training and support needs and to make informed decisions about who really needs new software releases, Wride says.

But this is also where the politics can get troublesome. Some users equate having the latest and greatest information technology with their status in the corporation. As a result, they want everything, whether they actually need it or not.

On the other hand, "when you look at how many people really need the functionality of a new release, it may be only 5% or 10%. By upgrading everybody, you're adding another layer of cost," Wride says.

Much of that additional cost is related to PC-related training and support, which costs U.S. corporations between $200 billion and $500 billion annually, according to the Personal Computer Assets Management Institute. By standardizing on PC hardware and software configurations — thereby reducing the number and complexity of systems to be maintained — companies could cut those costs by half, the consultancy estimates.

At The Chase Manhattan Bank, users who want to deviate from global standards set by the bank's corporate technology and information services arm must first show a legitimate reason for doing so. Applications for nonstandard hardware and software are reviewed by the user's business unit and IS, and both must approve the installation. The company also tracks on a global basis the number and locations of PCs as well as who uses them.

Chase also demands that vendors adhere to a consistent set of terms and definitions in contracts and licenses. Without these, an effective asset management program would be impossible, Friedman says.

In today's distributed computing environment, new questions about contracts and licenses arise constantly, Friedman says.

"'Can I use my suite of software at the office as well as at home under a single license? Or, if I'm using software at my desktop and my desktop happens to be a portable or a docker, do I have a legal issue when I take it out and take it with me?' These are the questions that never occurred when we had mainframes or midranges," Friedman says. "Without consistent contracts from vendors, it is unlikely that companies will ever be able to manage [PC assets] in a consistent way."

That, he adds, is why several user groups, including the New York-based Open User Recommended Solutions group, is working with vendors to establish consistent licensing and contract terms.

But even with standard configurations and licensing terms, an asset management program is only as good as people's willingness to abide by it, says David Collins, manager of emerging technologies at Piper-Jaffray, Inc., a large regional brokerage firm in Minneapolis.

There are also a lot of touchy-feely issues with asset management, Collins says.

Collins makes a point of talking to users to get them on board. Among other things, he says a uniform software usage policy enables IS to furnish users with better help desk support and systems virus protection. Most of the time, this works to get previously reluctant users with the program.

"Our organization is small enough to sit down and talk with people with concerns," Collins says. "With any kind of big project, user preparation is important. We try to give people explanations."

"If you haven't done asset management in the past and then all of a sudden you migrate to active management of the assets, users get very worried," he says. Allaying those concerns may take lots of talking and explaining, he adds.

"Even though a PC is a corporate asset, people think of it as their own, and they get very offended when IS' software management package scans what they feel is their hardware," Collins says. "They get very worried and they want to know who you [in IS] are and what you're doing."

"Asset management is certainly something every CIO is looking at. If they're not, that may be one of the reasons the job has such a short life."

– ANDREW DAILEY, A LONDON-BASED ANALYST AT GARTNER GROUP, INC.'S SOFTWARE ASSET MANAGEMENT SERVICE

The cost of PC ownership over a five-year life cycle — including equipment, training, usage and maintenance — has mushroomed from $19,000 in 1987 to more than $41,500 today. The cost of the hardware and software may have decreased, but their complexity have increased, spurring a rise in ancillary support, training and maintenance costs.

SOURCE: GARTNER GROUP, INC., STAMFORD, CONN.

Management support

Support from executive management as well as business managers companywide is critical to the success of any asset management process, Dailey says. This is because more than 50% of the cost of owning a PC is part of end-user operations spending, much of which IS does not manage.

Without strong support from senior management, an enterprise asset management effort will achieve only modest, short-term success and will fail to reduce long-term costs, Dailey emphasizes.

Meanwhile, the main purpose of establishing a system is to manage total PC life cycle costs over the long run.

In the end, Wride says managing PC-based assets is a balancing act for IS. "The tough job I have is balancing cost and security aspects against the whole reason we put computers on desks to begin with, which was to empower users," he says. ■

COMING TO GRIPS

AN EFFECTIVE TECHNOLOGY ASSET MANAGEMENT PROGRAM CAN HAVE SEVERAL BENEFITS:

- MORE ACCURATE COST ASSIGNMENT FOR COMPUTER ASSETS
- BETTER PURCHASE AND DEPLOYMENT DECISIONS
- OPTIMAL MANAGEMENT OF COMPUTER LIFE CYCLES
- BETTER USE OF WARRANTY AND SERVICE CONTRACTS
- IMPROVED PLANNING FOR FUTURE ACQUISITIONS
- GREATER SECURITY OF EXISTING ASSETS
- MORE ACCURATE AND TIMELY FULFILLMENT OF USERS' NEEDS

SOURCE: EDGEX INFORMATION SERVICES, INC., RYE BROOK, N.Y.

King is a *Computerworld* senior editor, management.

Our Newest Servers Are Designed To Give

Solid Support. *As you'd expect from the world leader in networked servers, we've engineered our newest models to reliably serve in a NetWare environment.*

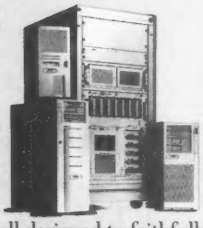
Early Warning System. *Compaq Insight Manager monitors hundreds of server components and warns you when problems are merely a possibility.*

Flexible Configuration. *SmartStart revolutionizes the setup process, automatically configuring and optimizing NetWare on your server.*

Fewer Aches And Pains. *Compaq servers are backed by our three-year on-site warranty* and free access to our 24-hour help line (with additional plans available).*

Moves Information Fast. *Compaq's TriFlex/PCI architecture builds upon the new PCI standard, for even higher performance.*

Prevents Unnecessary Strains. *Our Pre-Failure Warranty** replaces major parts at no cost — before they can interrupt a group's critical work.*



People are born with one. Businesses have to build them from scratch. To help you assemble the most reliable information backbone, Compaq announces a new generation of servers. They're all designed to faithfully serve the demands of workgroups and departments — from the expandable ProSignia line to the business-critical ProLiant family (with up to four Pentium processors). And they're all engineered to do what every

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YOUR COMPANY THE THING IT NEEDS MOST.

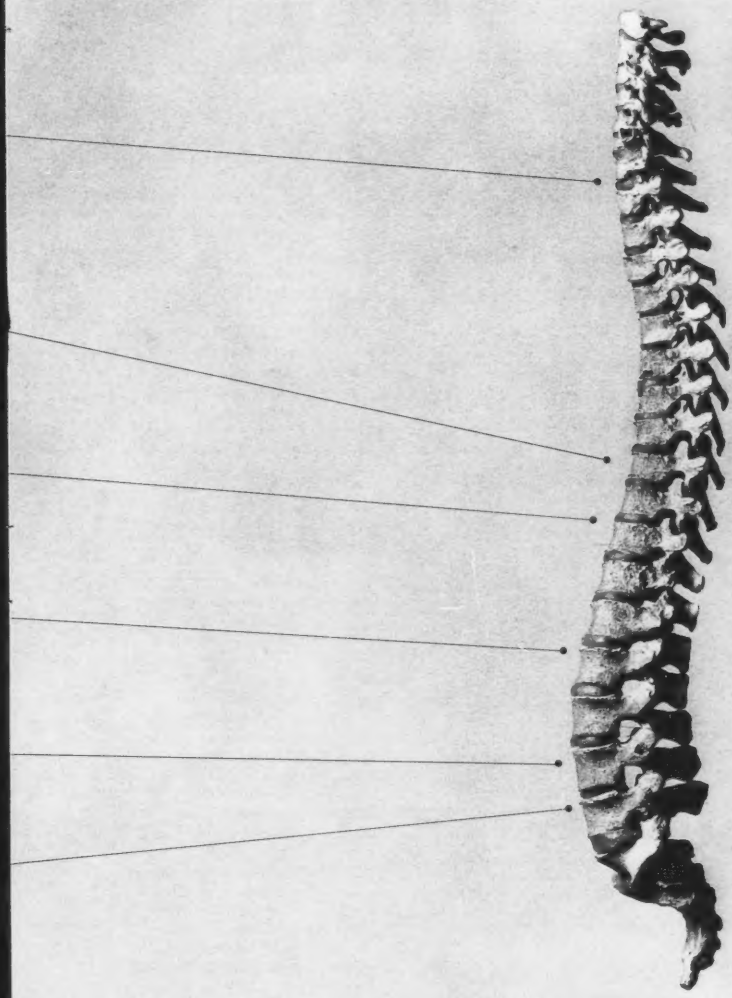


Fig. 1 Backbone

profitable business demands: keep running. Compaq's CD-based SmartStart ensures a smooth, integrated installation, and our Insight Manager constantly monitors for potential problems — which, if encountered, are covered by the Compaq Pre-Failure Warranty. For more information, call 1-800-853-9518 or visit our Web site at www.compaq.com. We can help you get the performance you need. As well as the support.

COMPAQ

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TRAINING IS PLENTIFUL FOR BASIC RE-ENGINEERING, BUT WHEN IT COMES TO ADVANCED EFFORTS, LIMITED RESOURCES ARE AVAILABLE FOR COMPANIES THAT ARE . . .

RETACKLING RE-ENGINEERING

BY LESLIE GOFF

Five years ago, as part of a transition from manufacturing commodity chips to manufacturing customized chips, Texas Instruments, Inc. geared up for a major re-engineering effort in its semiconductor operations. But management couldn't find an easy way to train staff in the methodologies and techniques they were about to use.

So TI launched its own training program, forming an internal think tank to develop a re-engineering methodology that would enable staffers to design new business processes. Since 1992, the think tank has trained more than 1,000 employees in these processes. The trainees include re-engineering team leaders and members and business unit managers responsible for process redesign, among others. The company later designed a second program called "Guiding Radical Change," which it now offers through its Center for Excellence (see chart).

TI's predicament and solution underscore the dearth of formal training available to IS staffers facing advanced re-engineering projects. There's no comprehensive instruction manual on how to wade through the various methodologies, choose one that's right for your corporate environment, redesign business processes and get employees behind rapid change.

No single solution

Several organizations, such as the American Management Association in New York, offer introductory re-engineering training courses. But only a handful offer advanced coursework for companies that already have some first-hand re-engineering experience. These include TI's Center for Excellence in Plano, Texas, Hammer & Co. in Cambridge, Mass., and the Boston University Center for Management Development in Tyngsboro, Mass. More common are executive roundtables, conferences and consulting services.

"It's a patchwork quilt—there's no one central resource that will teach you everything you need to know: practice management, team counseling, project management, change management, interpersonal skills."

— MARYANN MANIACE, *President, Business Process Redesign, Inc., Randolph, N.J.*

"It's a patchwork quilt. There's no one central resource that will you teach everything you need to know: practice management, team counseling, project management, change management, interpersonal skills," says Maryann Maniace, president of Business Process Redesign, Inc. in Randolph, N.J. "Moreover, if you have been a single contributor and now you're asked to join a team, that may require skills you don't even have. And there's no one place to go to learn all this."

What to look for

When choosing a consultant, you should question not only the tools and techniques used but also how the consultant ensures that changes and results are sustainable, that re-engineering efforts are integrated with other corporate initiatives and that your staff gains the knowledge it needs, says Ron Mester, managing partner for general management services at Towers Perrin in San Francisco, which has its own re-engineering methodology.

"The most unnecessary but frequently asked question is, 'What are your specific tools and techniques?' They're all so similar among all the firms that that is not what's going to be the big differentiating factor," Mester says. "Some of the other issues are more important."

Process benchmarking, he says, can be a useful tool for learning more about re-engineering.

"Have some one-on-one time with other people who have gone through this several times. They can take you step-by-step through the obstacles and pitfalls based on their own experience. Reach out to another company. It doesn't have to be in your industry," Mester says. ■

Goff is a freelance writer in New York.

ADVANCED RE-ENGINEERING RESOURCES

LIMITED RESOURCES ARE AVAILABLE FOR ORGANIZATIONS THAT NEED TRAINING BEYOND INITIAL RE-ENGINEERING PROJECTS

Boston University Center for Management Development, METROPOLITAN COLLEGE CORPORATE EDUCATION CENTER, 72 TYNG ROAD, TYNGSBORO, MASS. 01879.
Services: Offers two advanced courses in business process re-engineering; both are competency-based electives in the Management Certificate Program. "Business Process Re-engineering" covers work process improvement, tools and techniques, successful implementation and required team skills and traits. "Concurrent Engineering: Redesigning the Product Development Process" specifically targets re-engineering issues related to new product development.
Fees: $695; 10% discount available to teams of three or more from the same organization.
Contact: Mark Gould, director, Center for Management Development, (508) 649-9731, Ext. 269.

The Conference Board, 845 THIRD AVE., NEW YORK, N.Y. 10022.
Services: Will host Business Re-Engineering Conference in New York June 1-2 for information systems executives, human resources professionals, chief executive officers, chief operating officers and other managers interested in re-engineering. Presentations will include "Beyond Re-engineering: Sustaining Your Competitive Advantage" by Whirlpool Europe Milan and "Technology Enablers" by Unilever. The conference will include roundtable discussions and sessions on "Re-engineering the Future," "Leveraging Re-engineering for Long-Term Results" and "Sustaining Momentum."
Fees: $835 for Conference Board associates, $1,045 for nonassociates.
Contact: Jeanne McNulty, New York Conference, (212) 759-0900.

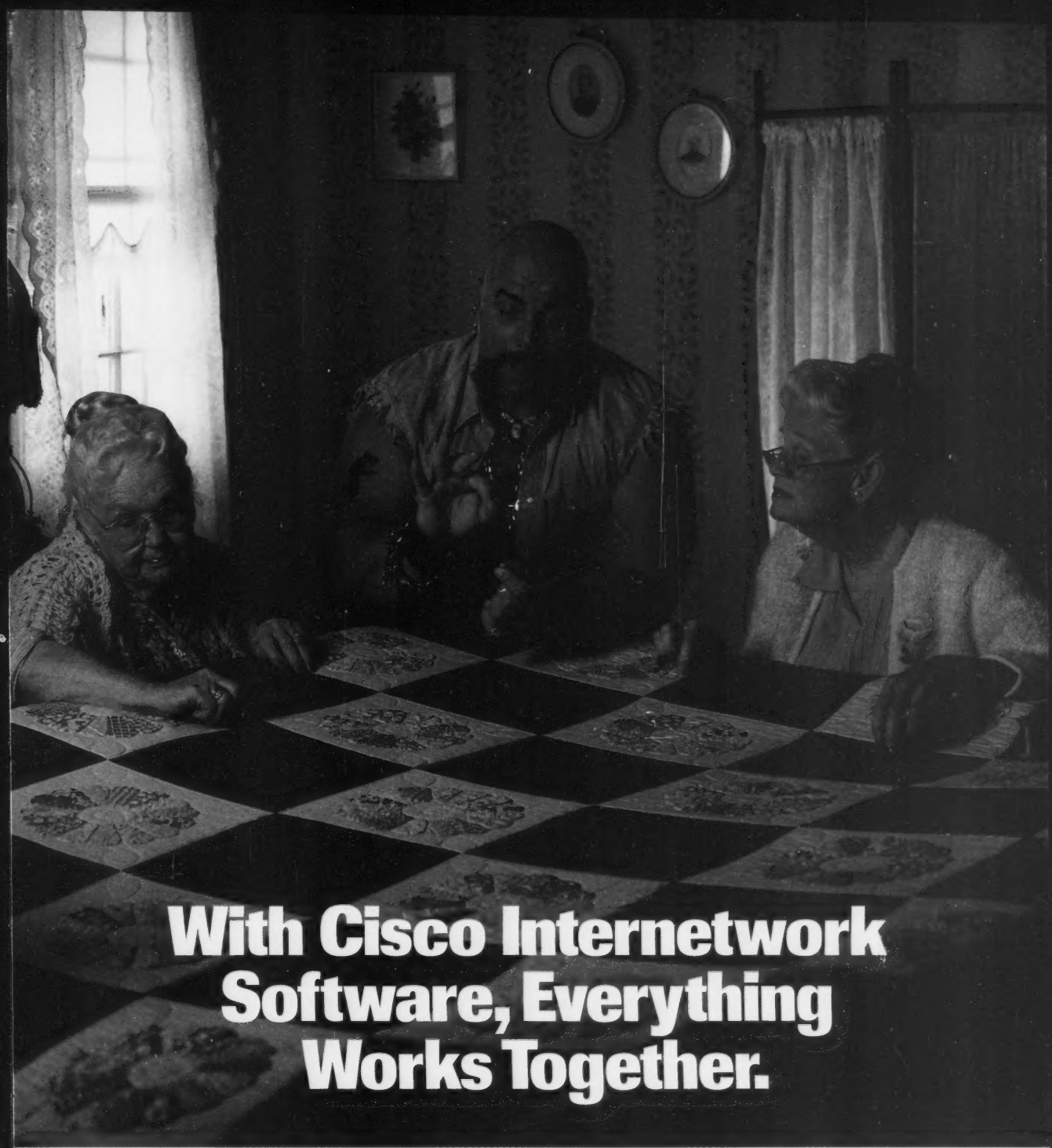
Chicago Research & Planning Group (CRPG), 421 N. NORTHEAST HIGHWAY, SUITE 201, BARRINGTON, ILL. 60010.
Services: Offers executive roundtable discussions (live and videoconferenced), including "Models and Methodologies Used in the Evaluation of IT," "IT Education and Certification Processes" and "Re-engineering: The IT Workforce." Dates and times were not available at press time.
Fees: Included in membership; annual fees are $800 for regular membership or $2,500 for preferred membership.
Contact: Richard Arns, president, (708) 381-9128.

Hammer & Co., 1 CAMBRIDGE CENTER, CAMBRIDGE, MASS. 02142.
Services: Offers four courses in re-engineering, including two advanced workshops: "Advanced Implementation," a three-day course for re-engineering sponsors and project teams; and "Re-engineering: Reshaping the Executive Agenda," a two-day course for corporate officers. The company, headed by re-engineering guru Michael Hammer, also sells two videos, "Understanding Re-engineering" and "Succeeding at Re-engineering," which feature discourses by Hammer and company profiles and come with a variety of support materials.
Fees: Courses are $2,200 for "Advanced Implementation" and $2,000 for "Reshaping the Executive Agenda." Videos are $950 for "Understanding Re-engineering" and $1,150 for "Succeeding at Re-engineering" or $2,000 for both.
Contact: (617) 354-5555.

International Benchmarking Clearinghouse IT Common Interest Group, AMERICAN PRODUCTIVITY AND QUALITY CENTER, 123 N. POST OAK LANE, HOUSTON, TEXAS 77024.
Services: Brings together benchmarking specialists and IS managers.
Fees: $150 for quarterly meeting; $300 for quarterly membership meeting (optional). Annual corporate memberships are $6,600 plus initiation fees ranging from $1,000 to $12,500, depending on the number of employees.
Contact: International Benchmarking Clearinghouse, (713) 681-4020.

Omicron, MOUNTAIN LAKES BUSINESS PARK, 115 ROUTE 46, BUILDING D-31, MOUNTAIN LAKES, N.J. 07046.
Services: Will host four executive interchanges in 1995 on re-engineering issues: "Choosing a Methodology," "Forecasting and Measuring Benefits of Business Process Re-engineering," "Establishing Re-engineering Stewardship" and "Applying Activity-Based Cost Accounting to Re-engineering Projects." Dates were not available at press time. Open to members only.
Fees: Included in membership. Fees for annual corporate membership, available to East Coast-based companies, range from $6,250 to $12,500.
Contact: Jim Webber, president, (201) 335-0240.

Texas Instruments Center for Excellence Business Process Re-engineering Practice, LOCATED IN A DOZEN PLACES IN THE U.S. AND CANADA.
Services: Offers four courses in business process re-engineering (BPR): "BPR Overview," for senior executives and managers; "BPR Workshop," a three-day hands-on seminar for re-engineering practitioners and team members; "Guiding Radical Change," for re-engineering team members; and a new workshop for advanced practitioners.
Fees: Range from $500 to $1,800, depending on length.
Contact: TI Registrar, (800) 336-5236, Ext. 1418.



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7 Key Services	NetWare 4.1	NetWare 3
1 **DIRECTORY** Global directory service	YES	NO
2 **INTEGRATED MESSAGING**	YES	NO
3 **MULTIPROTOCOL ROUTING**	YES	Add-on product
4 **NETWORK MANAGEMENT** Graphical user tools provide view of entire network	YES	NO
5 **NETWORK SECURITY**		
RSA public/private key	YES	NO
Restrict login to specific Mac address	YES	NO
Securty auditing	YES	NO
6 **FILE SYSTEM AND STORAGE** Support for data-migration hardware, data compression and disk block suballocation	YES	NO
7 **NETWORK PRINTING**	256 per print server	16 per print server
Additional Services		
• **INTEGRATED SYSTEM FAULT TOLERANCE LEVEL III**	YES*	Add-on product
• **CLIENT SUPPORT AND INTEROPERABILITY**		
NetWare for Macintosh, Number of user licenses included	Included in Netware user licenses	5
Graphical user tools	YES	NO
• **WAN SUPPORT** Network link Service Protocol™ (NLSP)™	YES	Add-on product
• **ARCHITECTURE**		
Maximum number of user connections per server	1,000	250
Nondedicated server	YES**	NO
Single login to network	YES	NO
Additive licensing	YES	NO

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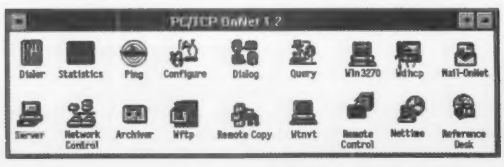
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Calendar

APRIL 9-15

American Management Association's 66th Annual Human Resources Conference & Exposition. Chicago, April 9-12 — Fees: Member rate is $1,095; nonmember rate is $1,195. Contact: American Management Association, Saranac Lake, N.Y. (800) 262-9699.

Innovative Thinking Convergence: The Conference for Both Sides of Your Brain. Santa Barbara, Calif., April 9-12 — Keynotes: Mike Veeck, owner of the St. Paul Saints; Margaret Wheatley, Ed.D., author of *Leadership and the New Science*; Doug Hall, author of *Jump Start Your Brain*; and George Land, co-author of *Breakpoint and Beyond*. Fees: $1,495 for nonmembers; $1,295 for Innovative Thinking Network (ITN) members. Contact: ITN, Santa Barbara, Calif. (805) 964-5363

AIIM '95. San Francisco, April 11-13 — Contact: Association for Information and Image Management (AIIM), Silver Spring, Md. (800) 477-2446.

APRIL 16-22

Embedded Systems Conference East. Atlanta, April 18-20 — Focus is on embedded systems products and services. Exhibits cover the full spectrum of development tools, hardware products and services for embedded design. Contact: Miller Freeman, Inc., San Francisco, Calif. (415) 905-2354.

The Conference on Interactive Marketing. New Orleans, April 19 — Contact: Bender, Goldman Helper, Los Angeles, Calif. (310) 473-4147.

E-mail World & WebWorld. Santa Clara, Calif., April 19-21 — Topics will include enabled mail applications, electronic-mail security and privacy, collaborative computing and groupware, electronic commerce and electronic data interchange, E-mail infrastructures and E-mail directories. Web topics will include "Living in the Web-User Perspectives," "Building Web-Access and Information Providers," "Weaving in Information Providers" and "Weaving in Information Space-Developing Web Environments." Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Future Directions of Enterprise Resource Planning Systems. Las Vegas, April 20-21 — Event is sponsored by Plant-Wide Research Group. Contact: Plant-Wide Research Group, N. Billerica, Mass. (508) 663-9212.

APRIL 23-29

The Evolution of Object Methods. Chicago, April 24; New York, April 25; Dallas, April 27; San Francisco, April 28 — Attendees will learn about the unification of object-oriented methods and the state of object methodologies. Contact: Rational Software Corp., Santa Clara, Calif. (408) 496-3600.

Patricia Seybold Group's 1995 Distributed Object Technology Forum: Using Objects, Middleware and Workflow to Reinvent the Enterprise. Cambridge, Mass., April 25-28 — Contact: Patricia Seybold Group, Boston, Mass. (617) 826-2424.

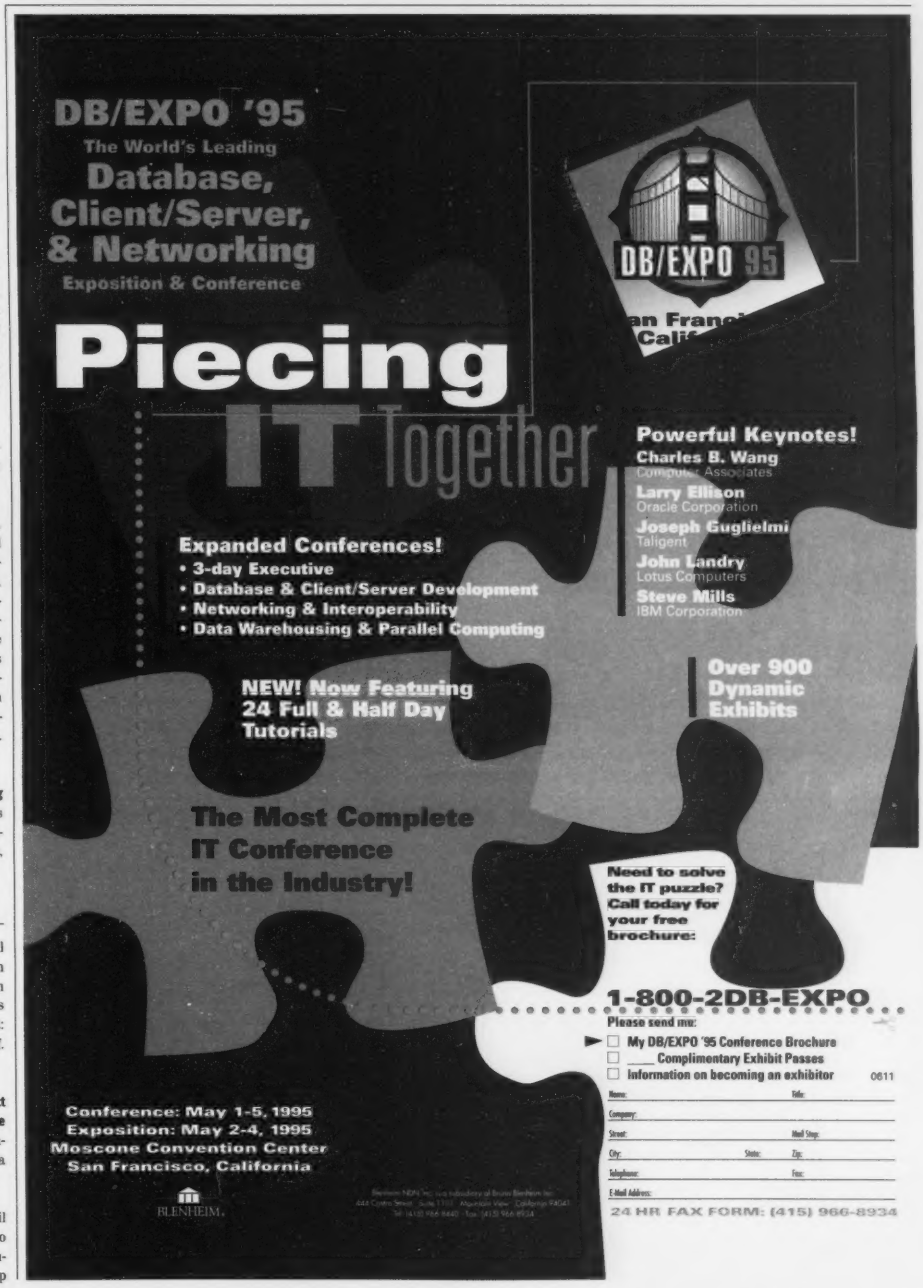
MES Roundtable Seminar. San Jose, Calif., April 26-27 — A two-day seminar and exhibition to discuss the benefits of Manufacturing Execution Systems (MES) software for real-time shop floor control. Contact: Manufacturing Execution Systems Association, Pittsburgh, Pa. (412) 781-9511.

IS Controllership for Centralized and Distributed Processing. Colorado Springs, April 26-28 — Topics will include the financial management of IS organizations, such as the nature of IS financial information, financially managing IS as a business, financial planning, cost controls such as chargeback, pricing IS services, activity-based costing, product costing, financial benchmarking, cost/benefit analysis and current IS financials. Contact: Financial Management for Data Processing, Colorado Springs, Colo. (415) 731-3706.

APRIL 30-MAY 6

Client/Server Computing: The Next Generation. Fort Lauderdale, Fla., May 1-3 — Contact: Ashley Pearce, Gartner Group, Inc., Stamford, Conn. (203) 967-6757.

ISINM '95. Santa Barbara, Calif., May 1-5 — Fourth IFIP IEEE International Symposium on Integrated Network Management (ISINM) Workshop. Contact: Mary Olson, ISINM '95 (805) 569-1222.



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Cutting through THE LAN JUNGLE

By Karen Zevin

The latest management software promises a single view of enterprise LANs, but all-in-one solutions may leave key functions unaddressed

BEFORE THE DAWN OF CLIENT/SERVER computing, few tools helped information systems organizations manage LANs. As the number of networks grew, this product deficit became critical.

"As we added client desktops, the network became more unmanageable, and problems were arising," says Darren Kammer, a systems analyst/programmer at Texas Instruments, Inc. in Dallas.

Like the tangled vines of a prehistoric jungle, LANs began expanding out of control. For many organizations, key LAN problems revolve around asset management, standardized reporting, network administration and troubleshooting. IS managers need solutions fast, and they want to be able to manage their LANs from a single centralized location.

Leading contenders for that role are suite products such as Frye Computer Systems, Inc.'s Frye Utilities for Networks, Intel Corp.'s LANDesk, Microsoft Corp.'s Systems Management Server, McAfee, Inc.'s BrightWorks, Novell, Inc.'s ManageWise, Saber Software Corp.'s Saber LAN Workstation and Symantec Corp.'s Norton Administrator for Windows. Other vendors have recently announced new LAN management platforms, such as Digital Equipment Corp.'s ManageWorks [CW, March 20], SunSoft, Inc.'s SolarNet and IBM's NetFinity.



Nip Rookes

Many network administrators consider these integrated products to be the most convenient solutions, but even they say such solutions don't do everything and that component parts are not all used equally.

Users who need enhanced integrated or console product functionality might require point products. For example, Saber's Saber Enterprise Applications Manager and McAfee's SiteMeter provide enterprisewide metering of applications and operate independently of integrated packages, but they can also be used with the vendors' integrated solution.

Likewise, OnDemand Software & Services, Inc.'s WinInstall can be used separately or as a third-party add-on. The package allows the user to distribute and uninstall software applications without writing scripts.

Horizon Technology, Inc.'s LANauditor provides additional functionality to enterprise network management platforms such as Hewlett-Packard Co.'s OpenView.

Some network administrators have found point solutions particularly useful for local operations. That is, local LAN managers may need to manage assets or perform other functions but do not require other network administration features.

Users also require point solutions because they provide functionality on different platforms or meet other network management needs. For example, storage and backup products such as those from Boole & Babbage, Inc. and Cheyenne Software, Inc. provide complementary network administration functionality.

▶ Guide continues on page 116

INSIDE

Strength in Numbers
Buyers' Satisfaction Scorecard looks at how the leading LAN management software suites from Microsoft Corp., Novell, Inc. and other leading vendors match user requirements.
Page 120

COMPUTERWORLD BUYERS' SATISFACTION SCORECARD

Desktop Sweep
Firing Line evaluators check out Intel Corp.'s LANDesk 2.0, the latest version of the hardware vendor's desktop and LAN management software.
Page 122

FIRING LINE

Lab Report: Rmon or Analyzer?
The Tolly Group test lab reports that remote monitoring products are not going to replace protocol analyzers any time soon, but they may have a place in your management plans.
Page 126

Jungle Gear: The benefits of new LAN tools

BY KAREN ZEVIN

A desktop network management solution is worth the time, effort and cost involved in its installation and configuration, LAN administrators say.

Key benefits include centralized network management and savings from curtailed end-user downtime (see "Cost Savings" chart) and unnecessary software purchases.

Troubleshooting from one location is an immense savings in time and, ultimately, cost. "Remote [management of the network] is a lifesaver. We can sit at our desks and connect to machines instead of blindly talking to a user or going to their office," says Bob Reed, lead PC specialist at Sierra Health Services in Las Vegas.

Software distribution functionality has also been a substantial time- and effort-saver. Reed used Saber Software's Saber LAN Workstation to upgrade five different products for 800 users in one weekend.

Metering and inventory tools offer quantifiable cost savings, users say. "It used to be that with the purchase of every PC, we would buy a word processor, spreadsheet, database. Now, we have substantially fewer copies," Reed says.

Inventory management is being used to leverage computer hardware and software buying power. Some companies are tying it to their property management and purchasing system. They then pool property information and track equipment from the day of purchase to the day of replacement. The system allows the companies to buy in bulk and obtain better rates.

Traffic reporting is also recognized as a very useful benefit. Reports about network variables not only help managers run the LAN, but they also provide effective communication tools when dealing with executive management. ■

BUYERS' CHECKLIST

These are the most important areas of concern for users of LAN management products, based on the Buyers' Satisfaction Scorecard survey.

1. Service and support
A vendor's receptiveness to bug reports and how much face-to-face contact it provides are top priorities for LAN managers. They recommend checking the vendor's support track record before buying a product.

2. Server monitoring
Memory allocation, CPU usage, file system performance, disk status, network error counts and packet statistics are the bread-and-butter components of the LAN server. Failures at this juncture bring the system down immediately.

3. Security
Controlling access to the server and desktops as well as the LAN itself is of vital importance to prevent misuse of the system and damage to company data or applications.

4. Virus protection
Antivirus software is no longer an afterthought. Easy-to-use utilities that scan for a wide variety of viruses on the client and server are essential.

5. Notifications and alerts
Making LAN administrators aware of trouble through broadcast messages, E-mail, fax, print or paper is a primary task of LAN management tools. Managers like products that make it easy to set thresholds for trouble notification and provide a variety of trackable situations.

6. Variety of desktops and servers supported
Heterogeneous environments are facts of life for IS managers, though vendors don't always acknowledge this. For example, Microsoft's SMS supports only Windows NT servers.

7. Network traffic monitoring
Key at this level is which layers of the OSI model are tracked. Users want statistics on everything from media access (Layer 2) to applications (Layer 7). Real-time and historical data reports are also important.

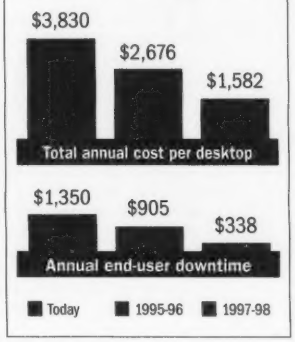
8. Integration of internal functions
For suites, the level of integration is a significant factor. The products are sold on the premise that they offer a central view of the LAN and LAN management functions.

9. Commitment to data standards
Standards compliance is another factor in the heterogeneous world of LAN management. Network traffic, applications and desktops all have different common access methods.

10. Price
This is less a factor for LAN management software than it is for high-priced equipment purchases, but users report that if a vendor sets its price too high compared with the average among competitors, the product will be dropped from the short list.

Cost Savings

Forrester Research, Inc. studies of Fortune 500 companies predict that management tools will decrease the cost of providing desktop support by as much as 50% during the next three years. The primary savings will come from preventing problems that cause systems to be taken down or crash.



Pathfinding: Choosing the Right Product

BY KAREN ZEVIN

The first step in choosing a LAN management solution is to examine the current and future needs of the organization.

"Think about the flexibility of the product and its ability to operate in the future," says Sam Bieber, network administrator at Omron Health Care in Vernon Hills, Ill.

Ultimately, this assessment results in different products being considered. When network management is the key issue, product emphasis might slant toward maximizing distribution and network administration functionality.

For cost-conscious organizations, inventory and metering represent the critical functionality.

The second step should be an examination and comparison of the products' feature sets. Usually, this will include an evaluation of a number of other product and vendor-related issues.


Nor Rosees

For example, for some network administrators, the reputation and size of the manufacturer is critical. Name recognition can enhance respect for the product and help sell it to the executive staff.

Many network administrators also weigh the quality of technical support.

"The receptivity of a vendor to bug reports and suggestions is very important. If they are not willing to listen to me, why should I make an investment?" Bieber asks.

In particular, managers suggest examining vendors for how much face-to-face and phone contact they offer, how often technical support has an answer and whether technicians investigate issues and listen when suggestions are made.

Bieber also offers a number of other purchase considerations. "No product is simply plug and play. You have to consider how much time you want to put into it in terms of learning, training and installation. Also, I watch the CompuServe forum for product complaints and bugs," he says.

Price, in particular, is always an issue. Although not an explicit driving force, price can eliminate a product from consideration. If a vendor's pricing is out of sync with the competition, network administrators say they will not consider the product for long.

Other key issues include product interoperability, compatibility with other network administration products, scalability and cross-platform capabilities.

Other items on users' LAN management wish list include:

- The ability to power up, power down and make changes from a remote site.
- More direct management of hardware.
- Databases that are more compatible with currently available Open Database Connectivity tools. ■

Zevin is the owner of Techknowledge Research Group, a computer industry market research firm in Palos Verdes, Calif.

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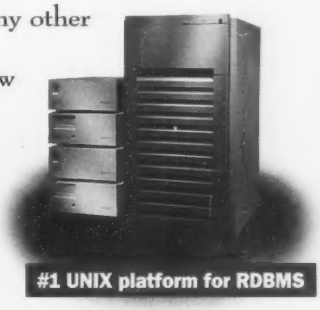


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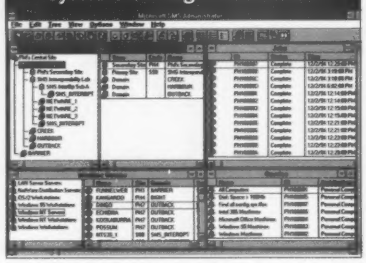
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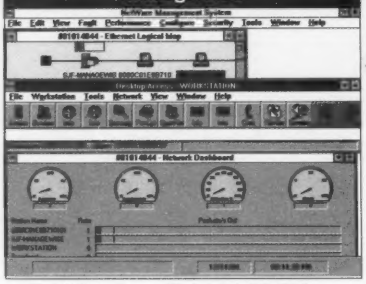
— Microsoft Corp., Redmond, Wash. (800) 426-9400

Service and support	**7.3**
Server monitoring	**6.5**
Security	**7.1**
Virus protection	**6.9**
Notifications and alerts	**6.7**
Variety of desktops and servers supported	**6.9**
Application metering	**5.3**
AVERAGE SCORE	**6.7**

(RESPONSE BASE: 30)

• Aside from SMS' management capabilities, Microsoft's support makes this product stand out. SMS requires Windows NT on its site server but supports most of the major network operating systems including Microsoft's LAN Manager, IBM's LAN Server and Novell's NetWare.

ManageWise



— Novell Inc., Provo, Utah (800) 453-1267

Service and support	**6.4**
Server monitoring	**6.5**
Security	**7.1**
Virus protection	**5.9**
Notifications and alerts	**6.3**
Variety of desktops and servers supported	**6.8**
Application metering	**6.1**
AVERAGE SCORE	**6.4**

(RESPONSE BASE: 30)

• ManageWise is a combination of products from Novell and Intel. Novell's NMS, NetWare Management Agent, NetWare LANalyzer and Intel's LANDesk Manager 1.5.1 and LANDesk Virus Protect have all been integrated under a common tool bar.

Ratings are based on a 1-to-10 scale where 10 represents extremely satisfied and 1 represents not at all satisfied. Categories are listed in order of importance to all users. Average score is the average of all categories.

Plenty of room for competition

Less than half of the 501 Novell sites surveyed use Novell s NetWare Management System (NMS), one of the products in ManageWise, as their management platform This leaves the door wide open for Novell s competitors.

Which management platform do you currently use?

Novell's NMS	48%
Hewlett-Packard's OpenView for Windows	16%
IBM's LAN NetView	10%
Hewlett-Packard's OpenView for Unix	10%
IBM's NetView/6000	6%
SunConnect's SunNet Manager	6%
Other	17%

(Percent of respondents, multiple responses allowed)

Further evidence of a wide-open market, the leading consoles reviewed in this Scorecard accounted for only 40% of this base.

Which network management console do you currently use?

Frye's Utilities for Networks	16%
Intel's LANDesk Management (see Firing Line)	13%
Saber Software's Saber LAN Workstation	7%
Symantec's Norton Admin. for Networks	4%
Other	60%

(Percent of respondents)

Source: Network Associates, Provo, Utah

BY KEVIN BURDEN

Network management suites help users get it all together — literally. This kind of software centralizes LAN administration on a single PC, minimizing the complexity of working with multiple products for specific functions.

As this Buyers' Satisfaction Scorecard survey of the leading LAN management suites shows, there are trade-offs among competing products as well as among individual packages and the suites. The Scorecard evaluates the Top 5 suites on the market.

Microsoft Corp.'s Systems Management Server (SMS) and Novell, Inc.'s ManageWise have a top-down approach. Both firms started with their own server operating system and built a management package to fit it.

The other three products — Saber Software Corp.'s Saber LAN Workstation, Symantec Corp.'s Norton Administrator for Networks and Frye Computer Systems, Inc.'s The Frye Utilities for Networks — were built from the bottom up. In other words, each vendor built a suite of utilities to fit either Microsoft's or Novell's operating system.

Still, the approach is not as important as the integration among the products' functions and the control they deliver.

Systems Management Server

As you would expect, SMS requires Microsoft's Windows NT Server on its primary site server and SQL Server on the database server. But, perhaps unexpectedly, it also works with Novell's NetWare domains — as long as NWLink and Gateway Services for NetWare are installed on the NT Server.

"SMS gives us complete control over our NetWare network," says Johnny Johnson, electronic data interchange coordinator at K&M Associates in Providence, R.I. "But Unix support is still tricky" because it is available only through third parties, he says.

SMS scored well for its security capabilities which, like the others, predominantly relies on its network operating system. Users can determine permission rights for remote-control functions and are alerted when remote control is activated on their system. "The only thing it doesn't do is tell who is trying to tap in," Johnson says.

ManageWise

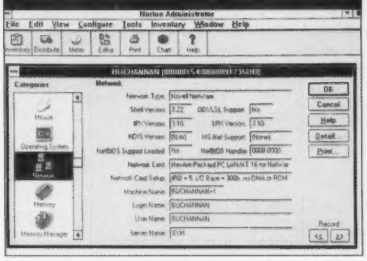
ManageWise is two suite products rolled into one, Novell's NetWare Management System (NMS) and Intel's LANDesk Manager (see Firing Line, page 122). Also included is LANDesk Virus Protect.

ManageWise suffers from two predicaments: bad timing and first-release syndrome. Less than a month after ManageWise's release, Intel delivered LANDesk 2.0 with software metering and distribution. ManageWise will integrate Version 2.0, but no date has been set. "It also suffers from Release 1.0 malady," says Jim Green, an analyst at Summit Strategies in Boston. "It's well integrated but not quite right. It will only get better," Green says.

The product's look and feel also takes some getting use to. "It's evident you're using two different products," says Jimmy Hwang, a network administrator at California State University. "It just doesn't have the look I'm used to with NMS."

show varied strengths

Norton Administrator for Networks



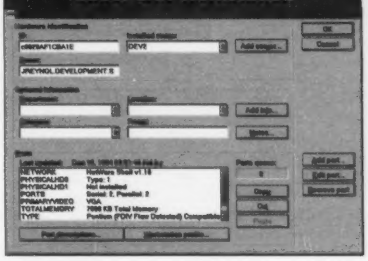
— Symantec Corp., Cupertino, Calif.
(800) 441-7234

Service and support	**7.2**
Server monitoring	**6.5**
Security	**6.4**
Virus protection	**7.3**
Notifications and alerts	**6.5**
Variety of desktops and servers supported	**7.3**
Application metering	**6.6**
AVERAGE SCORE	**6.8**

(RESPONSE BASE: 30)

- A clear benefit of Norton Administrator for Networks is its network independence. But its lack of a remote-control function restricts the product to single-site LANs.
- Virus protection is strong but requires the assistance of a related product, Norton AntiVirus.
- Norton Administrator relies on monitoring capabilities built into the operating systems.

Saber LAN Workstation



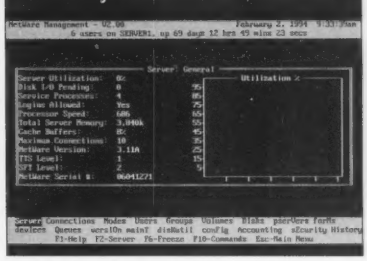
— Saber Software Corp., Dallas
(800) 338-8754

Service and support	**6.8**
Server monitoring	**6.5**
Security	**7.5**
Virus protection	**5.5**
Notifications and alerts	**6.8**
Variety of desktops and servers supported	**7.2**
Application metering	**7.2**
AVERAGE SCORE	**6.8**

(RESPONSE BASE: 30)

- The strength of Saber LAN Workstation is in its software metering capabilities where administrators have a choice of metering modes. LAN Workstation can audit application usage or run a secure mode to restrict usage.
- LAN Workstation's weakness is its inventory, which queries only clients, not file servers.

The Frye Utilities for Networks



— Frye Computer Systems, Inc., Boston
(800) 234-3793

Service and support	**6.8**
Server monitoring	**7.3**
Security	**6.0**
Virus protection	**5.5**
Notifications and alerts	**6.8**
Variety of desktops and servers supported	**6.2**
Application metering	**5.2**
AVERAGE SCORE	**6.3**

(RESPONSE BASE: 30)

- Frye Utilities for Networks is a loosely coupled, separately sold suite of utilities. Its modular approach lets users choose only the capabilities they need, while providing a unified framework. Users said the products were tightly integrated, although it was evident they were using separate products.

Ratings are based on a 1-to-10 scale where 10 represents extremely satisfied and 1 represents not at all satisfied. Categories are listed in order of importance to all users.

Norton Administrator for Networks

Because Norton Administrator is network-independent — meaning that it runs on most major network operating system platforms — the suite is most versatile when the networks are single-site LANs.

To beef up its functionality, Norton Administrator relies heavily on sister products to fill in holes such as remote control, security and virus scans. This is not a problem, according to Thomas Swayze, network administrator at American Western Life in Foster City, Calif. Each sister tool shows up as a button on the interface's menu bar.

But when it comes to monitoring servers and network traffic, not even sister products can help Norton Administrator. Swayze's solution was to move to NT. "Windows NT has a built-in monitor we can use when we switch over," Swayze says.

Saber LAN Workstation

Saber LAN Workstation is a tightly integrated suite of products that includes several modules: the LAN Workstation for hardware/software inventory and application metering and distribution; Saber Server Manager, a NetWare Loadable Module for optimizing server performance; and Saber Enterprise Applications Manager, which extends metering capabilities to multiple servers.

The inventory module can inventory networks on most network platforms. However, Saber Server Manager, the server monitoring module, requires NetWare 3.x or greater. Overall, users rated the product's server monitoring skills as average.

The suite's real claim to fame is software metering, a catagory in which it ranked the highest among the products rated in this Scorecard. Part of the reason is the solid integration between the metering utility and the inventory module.

"Metering tells me everything I need to know from application usage — from who's been using it to how long they've used it," says Rick Sayles, computer operations manager at Kentucky Housing Corp. in Frankfurt, Ky.

The Frye Utilities for Networks

Frye sets itself apart with its "buy-only-what-you-need" approach. Unlike the other suites in this evaluation, Frye lets users add any of its nine products as needed.

Despite its modularity, Frye products are extremely well integrated, says Daniel Furnier, telecommunications manager at the Spirit of America National Bank in Milford, Ohio. "The products work very well together, but it's clear you're using different products because you have to launch each one."

The Scorecard ratings show Frye's real strength — server monitoring. Frye has rounded up NetWare's monitoring and management tools such as Syscon, Pconsole, Fconsole and Monitor into a single program called NetWare Management. All these programs are accessed through a single pull-down menu.

"It's great. You no longer have to switch between the products," says Stan Lippian, MIS director at Hahn, Loeser & Parks, a law firm in Cleveland. ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line. This Buyers' Scorecard was conducted and tabulated by First Market Research in Austin, Texas.

FIRING LINE

Intel's LANDesk:
Strong support but weak icon protection

BY KEVIN BURDEN

Suites are all the rage in network management. But few products attempt to combine desktop and LAN management. LANDesk Management Suite 2.0, released this month by Intel Corp., is one of the few suites that provides Novell, Inc. NetWare administrators with a fully integrated pack of tools to manage both.

"Its integration is very important and has even been improved over past versions, especially the desktop manager, which now integrates inventory. Everything is right there in a snapshot," said Glen Farrell, LAN systems coordinator at Firestone Textiles in Woodstock, Ontario.

The most noticeable additions to Version 2.0 are the software distribution and metering. The evaluators said the addition of these features was a strong reason for upgrading as soon as possible.

The four firms interviewed for this evaluation included a textile company, a health care products firm, an automotive company and a management consultancy. The format was developed by Howard Rubin and Associates and Technology Investment Strategies.

Service

Every user interviewed in this evaluation had more than one success story to tell when it came to Intel's support.

Health care products firm: "Intel has what they call 'rangers' — programmers that roam the country responding to those of us with problems that can't be resolved over the phone. When Intel discovered they didn't have access to our system, they flew a couple of programmers out over the weekend."

Desktops and servers

LANDesk requires NetWare 3.11 or later versions for the management server and DOS or Windows for the client workstations. Macintoshes can also act as clients, provided they are run System 6 or 7. But one evaluator claimed not to have complete functionality over the Macintoshes.

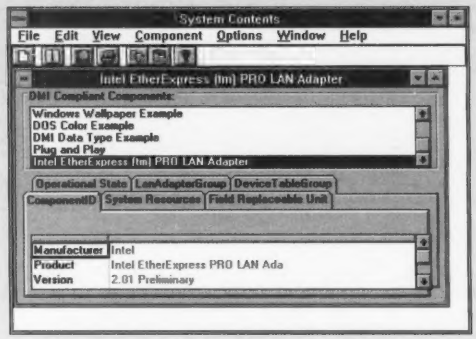
Health care products firm: "I can inventory the Macs on our network, but we are unable to have remote control over them. There's still too much incompatibility."

Server monitoring

Users were thrilled with the wealth of data the server monitor delivered on the server, cache, disk systems and volumes and its ability to export the data to external reporting applications. But users could not get the monitor to pinpoint the source of bottlenecks.

Health care products firm: "It will tell me when the system jumped over a certain performance threshold, but it doesn't tell me what or who caused it. I wish it would deliver more information on the bottlenecks." (See vendor response.)

Intel's LANDesk Management Suite 2.0



The Desktop Management Interface (DMI) Control Panel allows administrators to remotely manage DMI-enabled hardware without having to learn each vendor's unique product configurations

Alerts and notifications

All alerts are sent to an alert log where they are categorized based on severity. Evaluators said LANDesk effectively filtered secondary alerts and notified administrators of problems through E-mail or beepers. But writing scripts so LANDesk automatically responds to problems was not an easy task, according to two of the evaluators.

Textiles firm: "Script writing was pretty involved. But if you have some Visual Basic experience, you have a head start since it looks similar."

Virus protection

LANDesk Management Suite allows only basic on-demand virus scans of servers and clients via a scaled-down version of its sister product called LANDesk Virus 2.5.

Health care products firm: "We need real-time scans so we use LANDesk Virus and have it set up to scan everything. Intel says only to scan .EXE files for optimum performance since viruses normally won't attach to data files. But I only see a 5% jump in utilization, so I let it scan everything."

Security

Because LANDesk requires NetWare, security-like user directory rights are left up to the NetWare PCONSOLE program. Within LANDesk, evaluators were looking for more security such as password protection at the desktop level.

Health care products firm: "If I click on the icon on my PC, I'm in. If someone else clicks on [it] on my PC, they're also in. My PC can go on unattended, and I get nervous about that since LANDesk won't let my password protect icons." ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line.

LANDesk Management Suite 2.0

INTEL CORP.
Hillsboro, Ore. (800) 538-3373

Service and support Evaluators said Intel has a strong willingness to come on-site if the problem cannot be solved over the phone.	7.8
Variety of desktops and servers supported Requires Novell NetWare 3.11 or higher on servers and DOS or Windows on clients. Macintosh clients show up on inventory but with limited functionality.	7.0
Server monitoring Strong reporting facilities for server and network characteristics but unable to identify the source of bottlenecks. (See vendor response.)	7.0
Virus protection Only performs virus scans on demand. Requires LANDesk Virus Protect, a sister product for real-time scans.	6.5
Notifications and alerts Alerts effectively pinpoint the cause of a problem, although writing scripts to automate a response was very complex.	6.4
Security Relies on the security built into NetWare; minimal inherent security in LANDesk.	5.0
Total average score	6.6

Ratings are based on a 1-to-10 scale where 10 represents extremely high satisfaction. Ratings represent the average score from the four evaluators. Average score is the average of all categories.

Vendor response

Icon passwords:
There is no way to password protect icons. Portions of the product can be installed in separate directories to prevent access through normal NetWare rights.

Bottleneck sources:
Determining specific causes of bottlenecks is not possible in LANDesk. We will continue to add functionality to its server monitoring in follow-on releases.

Remote control of downed servers:
We have great interest in remote maintenance. However, it is our policy not to discuss unannounced products.

Computerworld Editorial Calendar

March - April, 1995

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
March 6	Feb. 17	Feb. 24	**Closer Look:** Enterprise Software Distribution Tools **Custom Publication:** White Paper on Object Technology	
March 13	Feb. 24	March 3	**CW Guide To: RISC Servers** Server Strategies: Short-term server purchases may be a matter of price/performance, but which systems make the most sense as long-term strategic platforms? Should users target different servers for every application or standardize on the best alternative? **Buyers' Satisfaction Scorecard:** Market leading RISC servers. **Firing Line:** Latest RISC server from a top vendor. **Custom Publication:** White Paper on Enterprise Application Development (part 1 of 4-part Enterprise Software Directions Series)	**UniForum** Dallas 3/14 - 3/16 Starch Study
March 20	March 3	March 10	**Closer Look:** Object-oriented Development Tools	**Object World** Boston 3/20 - 3/23
March 27	March 10	March 17	**CW Guide To: LAN Management** Vendors continue to add more sophisticated management capabilities to their peer-to-peer LAN management packages. How well do they address performance, security and tracking issues. How do these packages fit under the companywide network management umbrella? **Buyers' Satisfaction Scorecard:** Market-leading peer-to-peer LAN management packages. **Firing Line:** The latest software to consolidate LAN management for the organization.	**Interop + Networld** Las Vegas 3/28 - 3/30
April 1	Feb. 8		**Computerworld Client/Server Journal** **Vertical Market Focus:** Health Care **Section Feature:** Product Focus on Databases	AIIM Harvey Study Comdex Spring/ Windows World SIM Spring Conference DB Expo
April 3	March 17	March 24	**Closer Look:** PC Spreadsheets	
April 10	March 24	March 31	**CW Guide To: Document Management** Imaging and e-mail packages offer varying approaches to document management. Which approach is the most cost-effective and best fits your company's needs? How easily can documents be moved across platforms and applications? **Buyers' Satisfaction Scorecard:** Image processing packages for document management from the leading vendors. **Firing Line:** Evaluation of latest software conforming to new open document standards. **Custom Publication:** Windows World Open Supplement	**AIIM** San Francisco 4/11 - 4/13
April 17	March 31	April 7	**Closer Look:** IBM AS/400	
April 24	April 7	April 14	**CW Guide To: 32-BIT Operating Systems** Preparing your organization for 32-bit operating systems: How well do the leading products support enterprise requirements such as reliability, technical support and standards in their present and future products and strategies? **Buyers' Satisfaction Scorecard:** Operating system face-off: 32-bit systems. **Firing Line:** Latest 32-bit operating system for corporate users.	**Comdex Spring/ Windows World** Atlanta 4/24 - 4/27

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Lab Report: Rmon vs. Analyzers

Each tool has its pros and cons

BY MICHAEL SULLIVAN-TRAINOR

While LAN management software suites allow users to collect and analyze a broad slice of information residing in their tangled LAN environments, sometimes users need more instant razorlike analysis. Two tools used for the job are LAN protocol analyzers and Remote Monitoring (Rmon) probes.

Analyzers are designed to plug into a network and capture the traffic traveling along it. They come with dedicated CPUs or can be installed on a notebook PC. Their chief mission is to decode each Open Systems Interconnection (OSI) layer on each frame and display the results. Traffic can be filtered to target protocols at various layers, such as NetBIOS packets only. Analyzers are often used to check hot spots where trouble has been reported.

Hewlett-Packard Co.'s Network Advisor uses a rules-based system that attempts to interpret the data, reach conclusions and recommend solutions.

Network General Corp.'s Sniffer offers a distributed approach that allows analyzers to be placed at different segments of the network.

Armed with Rmon

Rmon probes focus on collecting data about the segments and interconnections between hubs and routers, each of which has its own device management systems. Like analyzers, they decode protocols and examine traffic. Unlike analyzers, probes are designed for permanent placement on the network.

Recently, hub and router vendors have announced plans to offer built-in Rmon capabilities (see chart below). This is possible because of Rmon standards that allow common implementations in different vendors' products. Analyzers are 100% proprietary in design and implementation.

This trend has caused some industry watchers to speculate that built-in Rmon will make LAN protocol analyzers obsolete. However, this is an unlikely scenario because of the limitations of Rmon probes, according to lab tests performed by The Tolly Group, a consulting, independent testing and industry analysis organization in Manasquan, N.J.

"The tests we have done of Ethernet Rmon probes show that the initial Rmon MIB [Management Information Base] is heavily weighted toward low-level data," says Kevin Tolly, principal of The Tolly Group. "If you are an Ethernet TCP/IP shop, it offers a lot. For any other protocol, like IPX or NetBIOS, it offers raw utilization data only, which is almost useless for elegant capacity planning or problem determination."

In addition to limited protocol analysis, which can be addressed through product enhancements, Rmon products are hampered by usability, performance and other concerns.

"Rmon vendors will add more extensions for other protocols," Tolly says. "Still, the LAN analyzers can capture data in real time, analyze it, store it and process it locally. A 10M-byte traffic load would require too much bandwidth to transport for remote storage and analysis. It's ultimately too expensive for vendors to build all that memory into Rmon products."

Users say the interfaces of Rmon products make them difficult to operate. "It's a maturity issue," Tolly says. "Most Rmon products are in Version 1.0. Sniffer and similar analyzers have had years to refine their approaches. ■

Sullivan-Trainor is *Computerworld*'s senior editor, CW Guide.

Rmon offers breadth, not depth

Rmon provides distributed LAN analysis, which can be embedded in hubs and routers. But it lacks the capacity to examine LAN traffic to the same level of depth as LAN protocol analyzers.

What Rmon does well

- Relatively less expensive than a network analyzer.
- Standards-based. Specified in RFC 1271 (Ethernet) and RFC 1513 (Token Ring).
- Distributed monitoring of multiple LANs.
- Collection and interpretation of monitored data performed at management station.

. . . and doesn't do well

- Uses IP transport, which can lead to configuration changes if IP is not already present.
- Relatively less memory and processing power than a network analyzer.
- No additional storage (such as a hard drive, etc.)
- Communication between probe and management software/station adds to network utilization.

Source: The Tolly Group, Manasquan, N.J.

Leading Analyzers and Remote Monitors

Here is a sampling of the leading LAN protocol analyzers and Rmon (Remote Monitoring) tools. Both provide LAN administrators with a real-time view of network traffic, and each has a role in LAN management.

LAN PROTOCOL ANALYZERS

AG Group, Inc.
Walnut Creek, Calif.
(800) 466-2447
Etherpeek 2.0.3

Cabletron Systems, Inc.
Rochester, N.H.
(800) 332-9401
MacLan View 2.00.02

Fluke Corp.
Everett, Wash.
(206) 347-6100
LANMeter Model 675

Hewlett-Packard Co.
Palo Alto, Calif.
(415) 857-1501
Network Advisor

Intel Corp.
Hillsboro, Ore.
(800) 538-3373
LANDesk Traffic Analyst Version 3.0

Neon Software, Inc.
Lafayette, Calif.
(800) 334-6366
Netminder Ethernet 3.01

Network General Corp.
Menlo Park, Calif.
(800) 764-3337
Sniffer Internetwork Analyzer

Wandel & Golterman, Inc.
Morrisville, N.C.
(800) 277-7404
DA-30 Internetworking Analyzer

RMON PROBES AND VENDORS

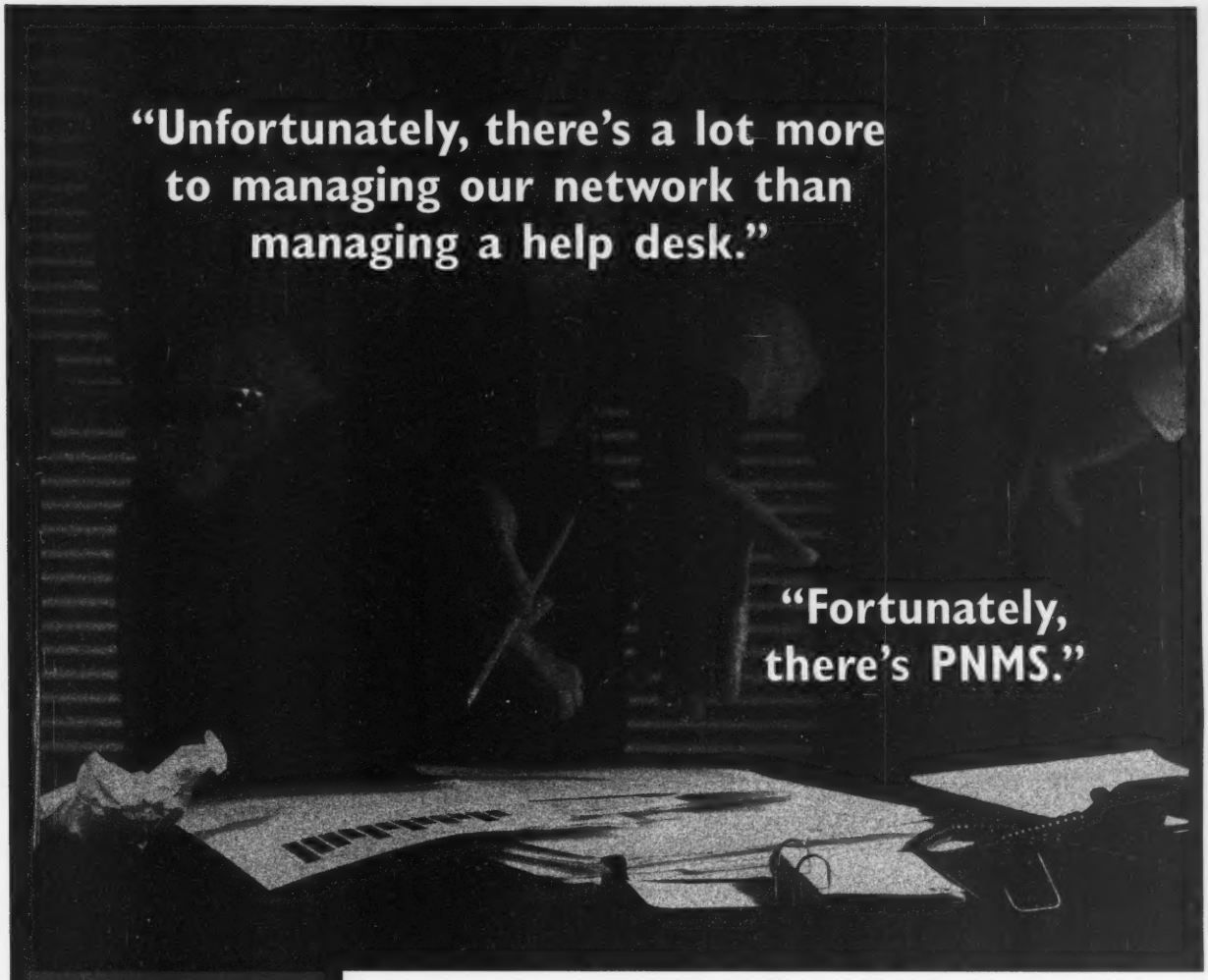
Axon Networks, Inc.
Newton, Mass.
(617) 630-9600
LANservant Probe

Hewlett-Packard Co.
Palo Alto, Calif.
(415) 857-1501
Proveview/SNMP 2.0

Unlike protocol analyzers, Rmon can be incorporated into hub and router technology. One vendor, **CrossComm Corp.** in Marlboro, Mass., (800) 388-1200, has an Rmon-compliant router on the market.

Cisco Systems, Inc. in San Jose, Calif., (800) 553-6387, and **Bay Networks, Inc.** (formerly Wellfleet) in Billerica, Mass., (508) 670-8888, are putting Rmon in their collapsed backbone nets.

Other vendors that have announced plans to integrate Rmon technology into their products include:
Hughes LAN Systems, Inc. in Mountain View, Calif. (800) 395-5267
Bay Networks, Inc. (formerly SynOptics) in Santa Clara, Calif. (408) 988-2400
Cabletron Systems, Inc. in Rochester, N.H. (800) 332-9401
Chipcom Corp. in Southboro, Mass. (800) 228-9930



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SOUNDOFF! **At issue:** Companies have invested billions of dollars in technology, but the debate rages as to whether computers have made us any better or smarter. Yes, says an academician – it's the productivity studies that are all wrong. No, counters an IS manager-turned-consultant, because workers are ill-prepared to use these user-unfriendly machines.

Are computers

Yes!

Our tools for measuring productivity are blunt when called upon to measure the tremendous improvements in service, quality, convenience, variety and timeliness

By J. Yannis Bakos

Let's put to rest once and for all the *old* idea that computers are not productive.

The way to assess the productivity of computers is not by rehashing the same tired stories about Sabre or Zapmail or the anecdotes about your friends playing solitaire on their Pentium computers that cost a zillion dollars each to support. Instead, you have to look at the economic data about computer spending and productivity.

Some early economic studies made big headlines. They found that computers failed to increase productivity measurably despite companies' heavy spending on technology — what has become known as the "productivity paradox." But these conclusions do not withstand close scrutiny.

Take, for instance, the aggregate studies in this area, which looked at entire industries or the economy as a whole. These studies show that productivity growth stagnated in the 1980s, especially in the service sector, despite billions of dollars spent on computers.

It is ludicrous, however, to blame computers for inadequate productivity growth in that period. Computer investments in the 1970s and 1980s pale in comparison to the trillions of dollars of machinery, buildings and other assets that firms had accumulated over several decades.

Computers didn't register on the capital spending radar until this decade. Any earlier link between computers and productivity would have been dwarfed by the impact of movements in oil prices and interest rates, changes in the tax code or fluctuations in the economy.



DAVID STRICK

Bakos is an associate professor of management at the University of California's Graduate School of Management in Irvine where he focuses on the competitive implications of information technology. He can be reached at bakos@uci.edu.

Furthermore, it takes time for companies to assimilate information technology and reorganize to take advantage of it. And this restructuring, which is often painful, didn't happen wholesale until the late 1980s.

Much of the productivity shortfall of the 1980s was a mirage anyway. Our tools for measuring productivity — designed for counting bushels of wheat and Model Ts off Ford's assembly line — are blunt when called upon to measure the tremendous improvements in service, quality, convenience, variety and timeliness. This is especially true in the service sector, where output data is unreliable and things that can't be measured are assumed not to exist.

Bank automated teller machines, for example, lower some traditional banking productivity numbers because they result in fewer checks being processed. However, nobody accounts for the convenience of being able to access your Kalamazoo bank account in Tokyo at 2 a.m. local time.

A second (and more reliable) type of productivity study was based on data about individual firms. The idea was that if you could compare two firms that are identical except for their computer spending, you could determine if the one that spent more on technology got its money's worth by creating more "output," such as sales or added value. Early studies showed once again that technology was not productive; firms that spent money on computers got nothing in return or, worse, *destroyed* value.

These results were particularly disturbing because they meant it was better to spend money in other ways, or in some cases, just to burn the money. So, would information systems managers be more productive if they spent their days at the beach? Were we throwing away $100 billion each year?

These firm-level studies were based on data from only a handful of companies in the age of big iron in the 1970s and early 1980s, so you can't put much faith in them.

Fortunately, more recent studies, based on current data and sophisticated analysis, are zeroing in on the long-lost value of information technology.

For instance, MIT researchers Erik Brynjolfsson and Lorin Hitt recently completed a comprehensive study of productivity in 380 large firms that together generate yearly sales in excess of $1.8 billion.

Brynjolfsson and Hitt found that computers were far from unproductive: They were significantly *more* productive than any other type of investment

Bakos, *page 130*

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boosting productivity?

No!

When we ask the question "Do computers increase productivity?" we forget that computers can't do anything but sit there unless they are used effectively by users

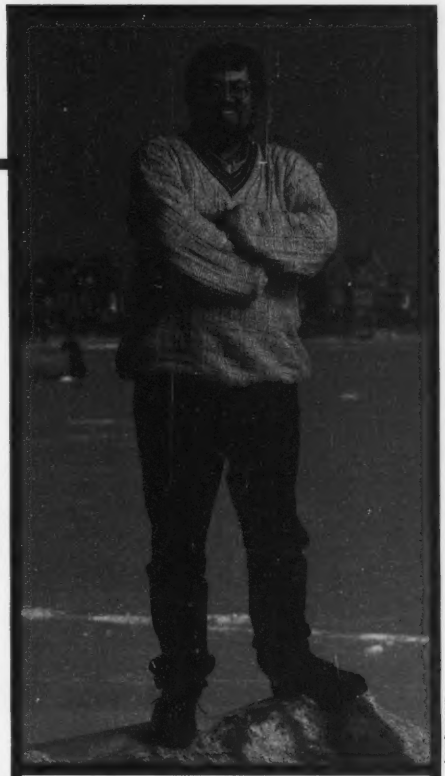
By Peter de Jager

Companies have spent lavishly on computers — billions of dollars each year. Unfortunately, businesses have little to show for that outlay. Computers aren't boosting our productivity.

The sad truth is it's not the computers' fault. The fault lies with our management of computers — how we oversee computer use. We don't train our users correctly. We have an undying belief in the "user-friendly" lie.

The widely overblown assumption is that people use computers properly. Knowing how to load and use a word processor, spreadsheet or database application does not guarantee that people use it correctly or productively.

Productivity lies in using tools wisely. It has little, if anything, to do with doing things fast. If people use computers incorrectly in the first place, upgrading their applications or operating systems or moving them to faster platforms will not increase productivity. It will just allow them to be wrong faster.



ANDRÉS SOLARZUCCHI

De Jager, a former information systems manager, is a keynote speaker on change, creativity and the chaos brought about by computers. He is based in Brampton, Ontario, and can be reached at pdejager@hookup.net.

Are typical users productive users? Have they received sufficient training to use the 20th century utensil, the PC? Are typical PC users qualified to use the high-powered technical marvels on their desks? No, no and no.

Consider for a moment the following real-life scenario: A consultant is sitting with a PC user who is putting some final touches on a 25-page document. The user runs a spell check and prints her work on a high-speed 300 dot/in. laser printer. While the document prints, she closes the word processor and loads up a desktop publishing application. She collects her printout and starts transcribing it to the desktop publishing application.

The consultant is dumbfounded. He asks quietly, "What are you doing?"

The PC user, a typical user who has been given this marvelous tool so she can be more productive, explains that she uses the word processor to collect her thoughts, compose her document and spell-check it. She then transcribes her finished document into the other application to produce a weekly newsletter.

She's been doing this every week for about a year, and she's pleased with her new tool because it's made her more "productive." As he listens, the consultant loads the word processor and the desktop publishing application at the same time.

Now the PC user is dumbfounded. She asks quietly, "What are you doing?" She was unaware that her PC was capable of doing this. She is silent as the consultant highlights her document, hits a few keys and moves her text into the desktop publishing application.

Can we call this PC user productive? Is she really a "typical" user? The answers are no and yes. Typical office workers get computers dumped on them, receive a few days of training and then are pushed beyond their knowledge boundaries and expected to be "more productive." My guess is that such users make up 90% of the computer users in North America.

How often have you seen people use the mail merge capabilities of word processors to manage a mailing list, use a spreadsheet as a word processor or use a database application as a "to do" list? It's not so much that these tools can't be used for other things, it's that there are other tools infinitely better suited to the task.

Other examples of wasted time include the following:

- Figuring out how a key user, who is absent or has left the company, produced a weekly report that's never been documented.
- Rekeying data lost when a machine dies a backupless death.
- Upgrading all 5,000 of your computers to a new operating system so that a handful of power users will benefit from some obscure feature.
- Using high-speed, high-resolution laser printers to produce interoffice memos.
- Upgrading all the company's word processors to provide 70% more capability to the 1% that need it.

A decade ago, we demanded that programmers receive formal training

de Jager, *page 130*

Bakos

CONTINUED FROM PAGE 128

these companies made. The gross return on investment averaged about 60% annually for computers, including supercomputers, mainframes, minis and micros. And IS staffers were more than twice as productive as other workers. (Make sure you tell this to your chief executive officer.)

The large number of companies studied is likely to average out any errors, and the multiyear data means this is not a statistical blip. These findings applied to manufacturing and service firms and have since been replicated by other researchers.

Even after you account for the fact that computers don't last as long as buildings and lathes, these payoffs are very impressive and suggest the *new* productivity paradox: How can computers be so productive?

We still don't have a definitive answer to this question, but one possibility is that these payoffs also reflect other investments, such as re-engineering efforts, that are necessary to realize benefits from information technology.



It is ludicrous to blame computers for inadequate productivity

Another possibility is that because the returns on computer investments vary greatly — from the big losers to the big success stories — companies view computer investments as they do junk bonds: If you take the risk, you should expect a handsome payback.

Now if you are an academic such as myself, you have the itch (and the time and the patience) to wait for methodical research to shed light on the intricacies of the relationship between computer spending and productivity. But if you compete in the marketplace, send copies of all the "paradox" stories to your competitors while you busily create value from your technology investment.

Don't let the productivity debate distract you from the real work of building, preserving or catching up with competitive advantage.

In addition to high productivity, you must deliver customer value in a way that cannot be copied easily. This may come by delivering the lowest total costs, which will be directly reflected in your firm's productivity, or it may come through product leadership or customer intimacy, which may elude traditional productivity measures.

For example, recent surveys show that client/server-oriented firms expect the biggest benefits of client/server to come from increased flexibility in supporting their organizational re-engineering rather than from reduced costs.

Finally, remember that the same dollar spent on the same computer system may give competitive advantage to one firm and expensive paperweights to another. What distinguishes the winners from the losers is the willingness to make organizational investments and restructure business processes as necessary to make the technology pay off. ■

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SOUNDOFF!

de Jager

CONTINUED FROM PAGE 129

before they were allowed near PCs. Today, we typically give users three days of training on a single product and expect them to know when and how to use word processors, spreadsheets and databases wisely, efficiently and effectively. Perhaps we expect too much from our trainers.



If people use computers incorrectly in the first place, upgrading their applications or operating systems or moving them to faster platforms will not increase productivity

To further compound our sins, we allow end-user computing to take place in isolation. Information systems people have long abdicated their responsibility to manage the computing activities of the general corporate populace. Most companies have no formal end-user computing policies, guidelines or procedures. Of those that do, most will reluctantly confess that they exist on paper only. Few, if any, have audit procedures to monitor the productivity of their end-user computing resource.

If they did, they would be sorely disappointed. Heads would roll. The productivity increases promised by the last hardware upgrade, the last operating system upgrade or the last application upgrade probably have not been experienced by anyone except perhaps a handful of power users.

In the absence of these formal guidelines and the means to monitor compliance, users do whatever they want to once they've received enough computing knowledge to become truly dangerous.

Today, anyone with a computer is expected to be a programmer, an analyst, a project manager, a documenter and systems operator. Perhaps we also expect too much from our end users.

When we ask, "Do computers increase productivity?" we forget that computers can't do anything but sit there with a snazzy screen saver painting pretty pictures unless they are used effectively. Perhaps we also expect too much from our computers.

The answer to the question, "Do computers increase productivity?" is intimately connected to "Do your users know how to use their computers?" and "Do you know what your users are doing?"

If you don't, then I'll calmly bet 10 to 1 that not only are your computers *not* increasing productivity, but they've probably reduced it. ■

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Computer Careers

Programmer's bookshelf

When developers have time to read, they're choosing books that include the following:

Serious

Books on Unix, object technology and the Internet are moving off the shelves the fastest, according to Bill Szabo, owner and chief buyer at Quantum Books, Inc. in Cambridge, Mass. Szabo says the best-sellers include the following:

Business Engineering With Object Technology by David A. Taylor (John Wiley & Sons, Inc.).

Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma et. al. (Addison-Wesley).

Programming Perl by Larry Wall and Randal L. Schwartz (O'Reilly & Associates).

Object Models Strategies: Patterns and Applications by Peter Coad (Yourdon Press/Prentice Hall).

Object Oriented Modeling and Design by James Rumbaugh (Prentice Hall).

Object Oriented Technology: The Manager's Guide by David A. Taylor (Addison-Wesley).

Neil Roeth, senior associate at Prudential Securities, Inc. in New York, says he likes different software development techniques and tools and recommends the following:

The C++ Programming Language by Bjarne Stroustrup (Addison-Wesley).

Object-Oriented Systems Analysis: Modeling the World in Data and **Object Lifecycle: Modeling the World in States** by Sally Shlaer and Stephen J. Mellor (Yourdon Press/Prentice Hall).

Peopleware by Tom DeMarco and Timothy Lister (Dorset House Publishing).

Wicked Problems, Righteous Solutions by Peter DeGrace and Leslie Hulet Stahl (Yourdon Press/Prentice Hall).

Rik Rowe, senior systems analyst at The Shareholders Services Group in Boston, recommends **Code Complete** by Steve McConnell (Microsoft Press).

Jay Michlin, chief executive officer of Computer Literacy Bookshops, Inc. in San Jose, Calif., says any books on PowerBuilder from Powersoft, a unit of Sybase, Inc., and Microsoft Corp.'s Windows 95, are also hot.

Humor

The Soul of a New Machine by Tracy Kidder (Little-Brown) and an occasional mystery novel —Neil Roeth, senior associate at Prudential Securities, Inc. in New York.

Neuromancer and Virtual Light by William Gibson are consistent sellers —Bill Szabo.

Gigabites: The Hacker Cookbook by Jenz Johnson (Ten Speed Press) —Jay Michlin.

Upcoming books: **The Internet Joke Book** compiled by Brad Templeton and **Irreverent Dictionary of Information Politics** by Paul Strassmann. Contains 141 cartoons with one-liners (Peer To Peer Communications).



Moneymakers

Companies are looking for people who can build World-Wide Web home pages, put up a Web site or ensure security. As a result, books on the Internet are in demand, Szabo says.

One in particular, **Teach Yourself Web Publishing with HTML in a Week** by Laura LeMay (Sams Publishing), recently attracted more than 350 people to the Computer Literacy Bookshop in San Jose, Calif. The turnout was more than double the size of the usual crowd that shows up for an author, according to Michlin.

For Internet security, two recent books address Pretty Good Privacy (PGP), a popular freeware package: **Protect Your Privacy: The PGP User's Guide** by William Stallings (Prentice Hall) and **Pretty Good Privacy** by Simson Garfinkel (O'Reilly & Associates).

Other new arrivals are **Computer-Related Risks** by Peter Neumann (Addison-Wesley) and **E-mail Security: How to Keep Your Electronic Mail Private** by Bruce Schneier (John Wiley & Sons, Inc.).

Lotus' Notes also offers programmers another fast-buck opportunity. Quantum Books stocks about two dozen Notes programming books and is frequently asked for **Creating Lotus Notes Applications** by Lisa Pyle (Que Corp.).

● Lists compiled by Alan Radding, a freelance writer in Newton, Mass.

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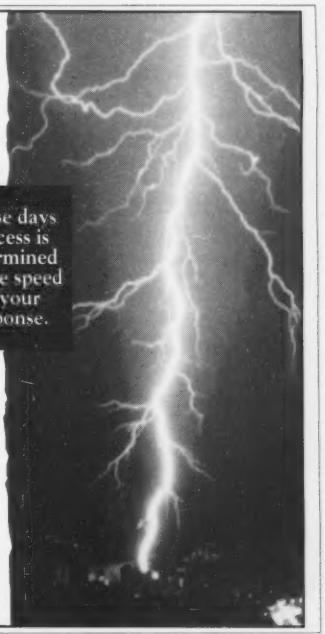
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SIDESTEP DEAD ENDS

IF YOUR NEXT JOB IS A LATERAL MOVE, BE SURE YOU HAVE AN OPPORTUNITY TO LEARN NEW TECHNOLOGIES.

BY CANDEE WILDE

Motivating mainframe professionals to learn newer, distributed technologies is a familiar topic, but the flip side is seldom considered. How are managers keeping their mainframe shops staffed with creative, motivated employees who would prefer to work with more advanced technology?

Good question.

Big iron shops "are dangling the client/server training carrot," says Richard Wonder, national director at the information systems division of Robert Half International, Inc. in New York. "They're telling recruits, 'You'll work on a mainframe for a couple of years, and as we re-engineer your application, you'll learn client/server.'"

For mainframe programmers making lateral moves, educational opportunities are good news. However, creating an environment where IS staff members remain motivated while supporting critical, technically outmoded legacy systems is a significant management challenge, according to Stephen G. Romano, vice president of post trade development at Securities Industry Automation Corp. (SIAC) in New York.

SIAC, a subsidiary of the New York and American stock exchanges, has client/server and mainframe operations. Mixing mainframe duties with newer technologies is one way it tries to meet this challenge.

Where practical, SIAC managers give staff who do mainly Cobol batch work a chance to learn a different technology for the mainframe such as a computer-aided software engineering tool or IBM's DB2 proprietary relational database. New technologies can also be put on the mainframe to interface with client/server. For example, a gateway between Sybase, Inc.'s database and DB2 allows mainframe data to be updated through a client/server application, Romano says.

Where possible, programmers and analysts are also rotated through different applications to keep them challenged and the legacy systems supported, Romano says.

Other companies are taking similar actions.

Evan Wride, IS director at the U.S. sales, distribution and marketing arm of Nissan Motor Corp., says the Carson, Calif., car manufacturer is in the early stages of moving some IS functions from a mainframe to client/server applications. This has precipitated personnel changes.

"Some people are happy coasting in CICS and Cobol," Wride says. "Others want to go to work on client/server. We have addressed that by pulling out five or six people, with a manager, to kick us off [in client/server] as a new group."

Initial client/server applications will enhance decision support. "We will download data from the host and give it to our [internal] customers in a user-friendly screen to access it," Wride says. A human resources client/server application will be the next client/server project Nissan tackles at this location.

Business problem solvers

At Avis Rent A Car System, Inc. in Garden City, N.Y., 65% to 70% of the firm's IS work is still done on the mainframe, says David McNicholas, executive vice president of systems marketing and development. But the company is integrating more distributed solutions into the mainframe environment even as the IS staff is being distributed throughout different departments. These changes are redefining the role of the IS professional.

"Before, they may have seen themselves as mainframe programmers," McNicholas says. "We're trying to convince them that they are Avis business problem solvers: You'll solve the problem with the mainframe today, but we are investing in other ways to solve the problem, and you'll have other tools available."

The extra push to address such concerns is worth the effort — IS staffers feel the difference. "We're getting the opportunity to work on [new technologies] pretty quickly," says Craig Ludwig, a computer analyst at Beckman Instruments, Inc. in Brea, Calif. Ludwig is training in PowerBuilder from Powersoft, a unit of Sybase.

Eventually, the bigger problem won't be motivating mainframe professionals but finding enough of them to do the job.

GET THE JOB AND THE TRAINING

Avoid taking a job where there is no chance to expand your skills. Experts recommend asking the following during your next job interview:

- **Does the company have plans to migrate to any new platforms?**
- **To what architecture is it moving?**
- **Does it retrain staff?**
- **Can you speak to someone who works in a similar capacity to learn about the company's commitment to training?**

When Tony Rodriguez, director of the International Computer Professional Association in San Francisco, receives the relatively rare request to recruit someone to work in a mainframe shop, he finds it virtually impossible to grant.

"Not too long ago, I received a call from a placement firm in London. They were looking for mainframe guys for a job in Australia. Their client was a company in Sweden. That's how far they had to look to find someone," he says. ■

Wilde is a freelance writer in Easton, Conn.

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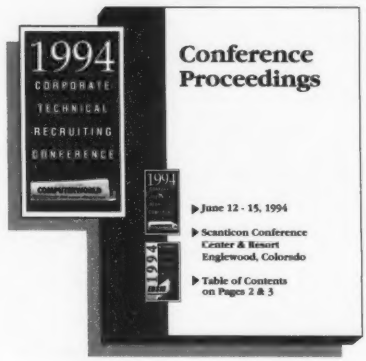
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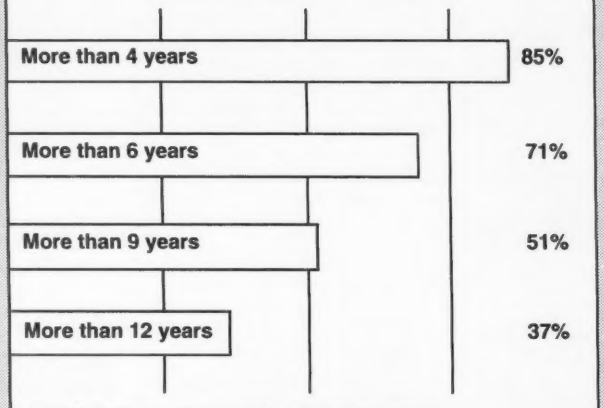
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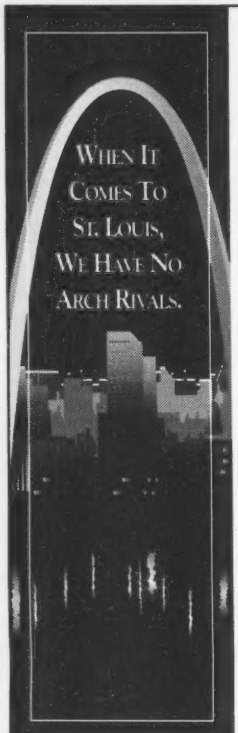
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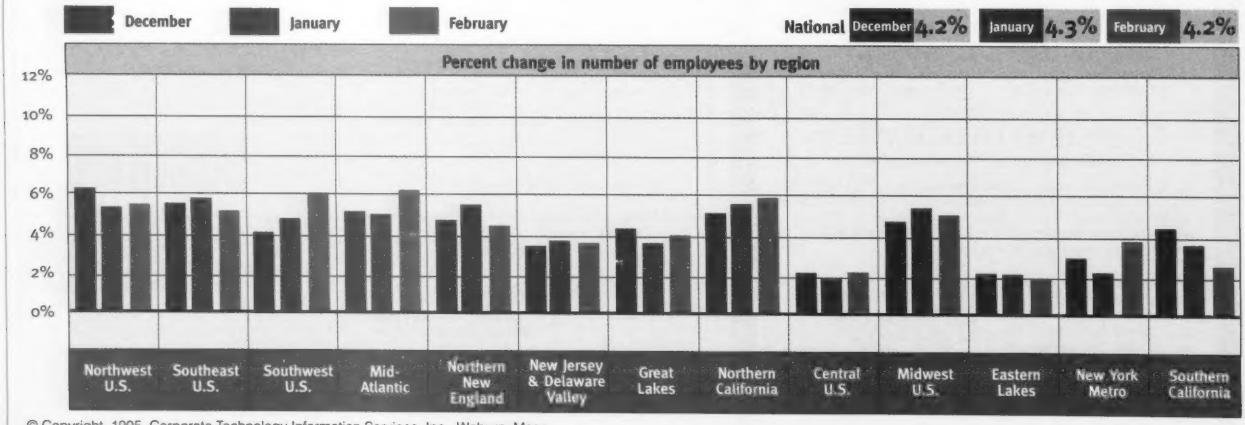
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DIRECTOR OF SOFTWARE ENGINEERING (Job Code A-CW)

EMASS is seeking an experienced Software Engineering Director to run the software development organization. Responsibilities include hiring, reviews, budgets, and schedules, as well as product technical direction, engineering procedures, and strategic relationships with other companies. The ideal candidate will meet the following requirements:

- 10 years' software management
- 3 years' director-level management of a 30 member team
- Team building skills
- Experience in Open Systems Engineering
- BS in Engineering

ENGINEERING PRODUCT MANAGER (Job Code B-CW)

EMASS has an opening for a highly motivated Engineering Product Manager to run the 3-8 member software team. This team will be responsible for evaluating, selecting and integrating a third party backup product into the EMASS product line. Will develop extensions and port the products. The ideal candidate will meet or exceed the following requirements:

- Experience in technical management
- Familiarity with backup/restore products and techniques
- Networking technology familiarity
- BS in Engineering

SOFTWARE ENGINEERING MANAGER (Job Code C-CW)

EMASS is seeking a highly motivated Software Engineering Manager to build and lead a team of software engineers. This team will be responsible for supporting and enhancing an existing C++ based product which runs on several UNIX platforms. The ideal candidate will meet or exceed the following requirements:

- 5 years' UNIX/C/C++
- 3 years' experience running a software team including supervision, project administration and work direction
- Strong software development methodologies
- Experience with device drivers and networking interfaces
- Proven track record of developing high quality software products on schedule

SENIOR GUI SOFTWARE ENGINEER (Job Code D-CW)

EMASS currently has an opening for an experienced GUI Software Engineer with a proven track record of successful deployment of user interface products. This individual will be responsible for design, development and deployment of the next generation user interface product for the EMASS product line. This will also require a group to develop a common user interface for the four key EMASS products. The ideal candidate will meet the following requirements:

- 5 years' experience with GUI's using Motif
- 3 years' project management experience
- 5 years' UNIX/C/C++
- Strong software development methodologies

JR. & SR. UNIX/C/C++ PROGRAMMERS (Job Code E-CW)

EMASS has multiple openings for programmers of various experience levels to help develop and enhance software based products targeted for the open systems marketplace. The ideal candidates will meet the following requirements:

- UNIX/C/C++
- RPC and socket programming
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- Self-directed and highly motivated

For consideration, mail, fax, or e-mail your resume and salary history, indicating appropriate Job Code, to: EMASS Human Resources, 10949 East Peakview Ave., Englewood, CO 80111. FAX: 303-792-2465. E-mail address: jobs@aap.com.

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TECHNOLOGY ROUNDUP: Metering software

FOUR SOFTWARE METERING PRODUCTS LEAD IN A MARKET OF MANY STAND-ALONE OFFERINGS

By Cheryl Gerber

The goal of PC-based software metering today is more one of business than of technology. Whether you monitor the software on your network to determine license compliance, curtail overspending, leverage unused licenses or justify a purchase, your company's eye is on cost control.

And, unlike its predecessor — Unix-based technical license management software — DOS and Windows-based software metering does far more than just keep track.

"Software metering goes beyond piracy into software asset management. The ultimate goal of asset management is to bring down the total cost of ownership," says Christopher Germann, a research analyst in information technology management at Gartner Group, Inc. in Stamford, Conn.

Many software metering tools are available, with four leading the way (see box at right). While most are Novell, Inc. NetWare Loadable Modules (NLM), one notable exception is Windows-based Express Meter from Express Systems, Inc. in Seattle. Express Meter runs on Novell's NetWare and non-NetWare networks and uses server-based executables as well as client terminate-and-stay resident (TSR) programs. Analysts say the word is that features of Express Meter will be folded into future versions of Microsoft Corp.'s Systems Management Server (see story, page 115).

Stand-alone PC-based software metering products have added the following new features in the past two years: multiserver and wide-area network metering, package suite licensing, asset management and reporting.

They may become even more sophisticated in the future. Network inventory products would handle printed electronic content for those who buy, for example, stock market quotes, electronic research or reference materials — items otherwise known as electronic commerce.

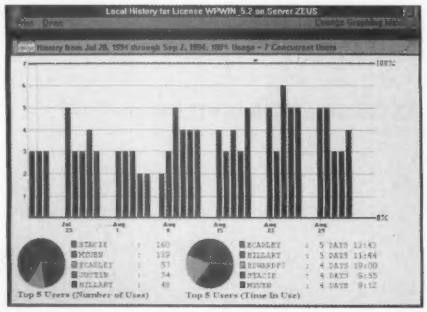
Tough years ahead

While secure electronic commerce could be the wave of the future for software metering, it may be premature for simple license management considerations now. "This market is just beginning," says Tony Picardi, a software analyst at International Data Corp. in Framingham, Mass. "There's little degree of penetration yet."

Germann agrees. "Publishing software electronically will take off. The technology is ready, but vendors must be ready to change their business model. If software metering tool vendors are going to survive [the next] three years, they [must] provide ever-higher levels of functionality and break it down by product vendor and license type," he says.

It's also possible these tools will be folded into other technology. "Software metering is tactical for the next three years until that functionality is subsumed by the network operating systems," Germann predicts.

These tools are also prime candidates for a bundle, Picardi says. ■



Metering tools *such as SofTrack slice and dice software use*

Gerber is a freelance writer in Kingston, N.Y.

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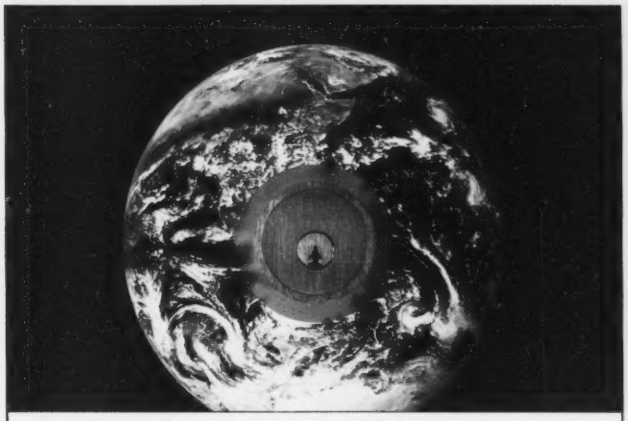
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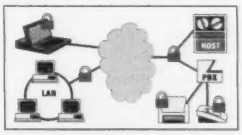
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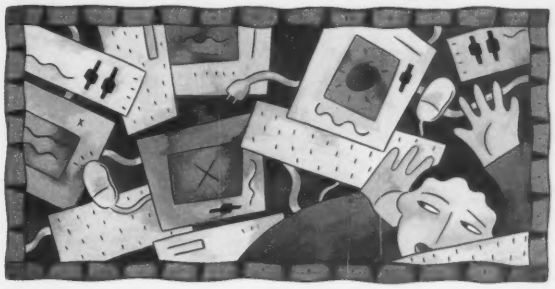
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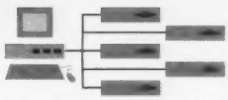
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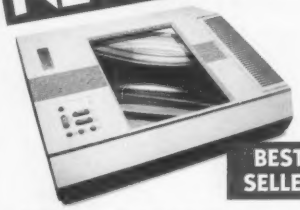
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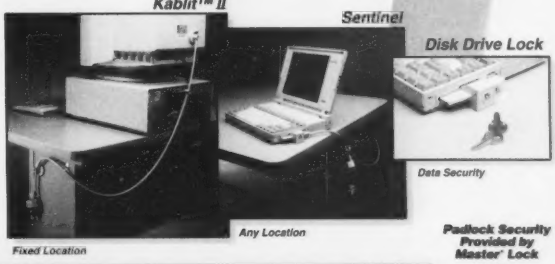
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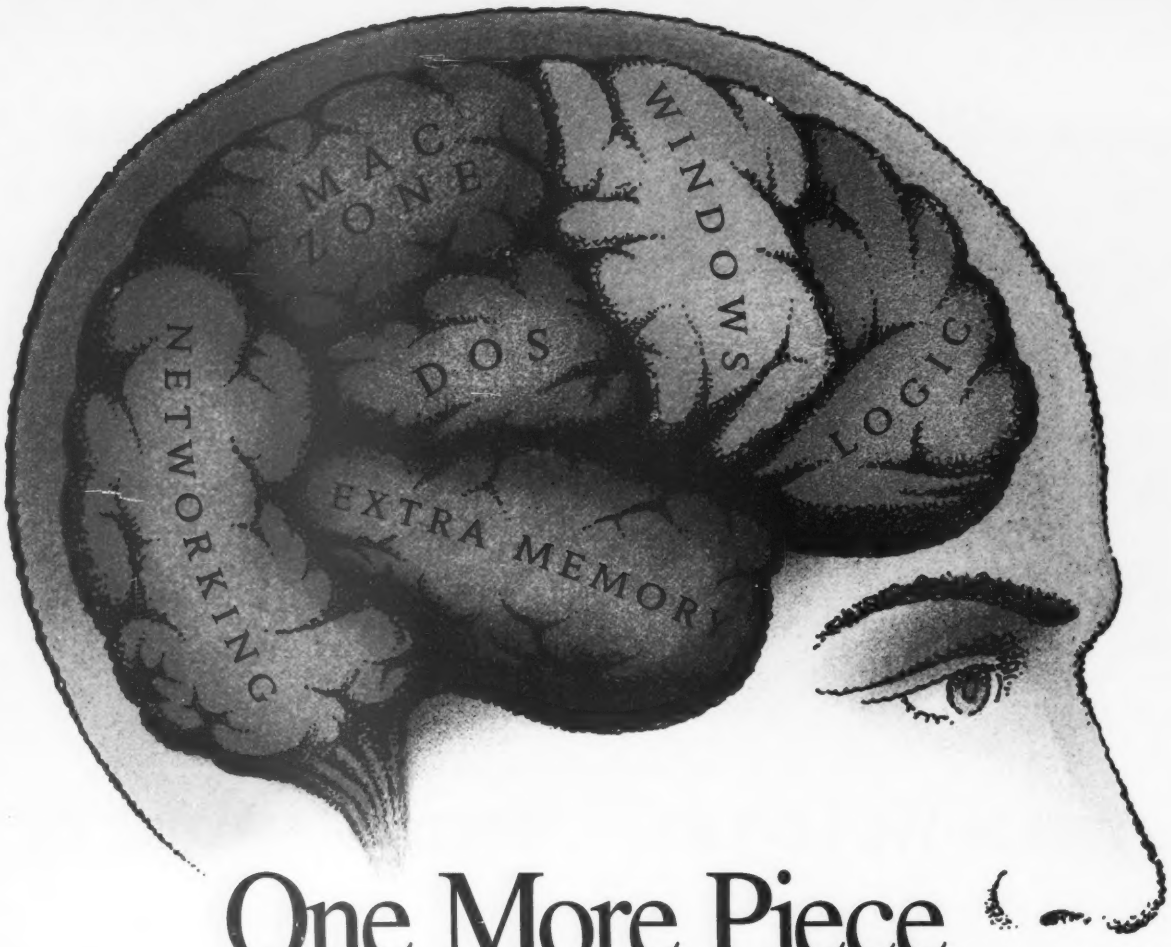
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Advertisers' Index

AIIM	59
American Power Conversion	104/105
Andersen Consulting	98
Apple	59
Apple Enterprise Awards	124-125
AT&T Paradyne	41, 94-95
Buchanan	C4
Bay Networks	98
BBN Planet	9
Borland	17
Cabletron	100-101
Chiprom	83
Cisco Systems	109
Compaq Computer Corp.	42-45, 106-107, 117
Computer Associates	3
Compuware	76-77
Client/Server Journal Top 25	56
CW Circulation	97, 153
CW Classified	58, 65, 86, 97
CW Client/ Server Journal	72
CW Custom Publications	28, 66
CW Editorial Calendar	123
CW on CD	158
CW Sweepstakes	104
DB/Expo	113
D&B Software	25
Dell	G1-G3
Digital Equipment Corp.	22-23
ExecuTrain	154
Executive Technology Summit	33
Financial Management for Data Processing	139
FTP Software	112
IBM	26-27, 52-53, 88
Informix Software	93
Innovation Data Processing	7
IRI Software	132
Logent Software	10-10
Lexmark	114
Linguistic Technology	99
Lotus Development Corp.	30, 80-81, 131
Micom	10
Micro Focus	11
Micro Age	15
Microsoft	34-35, 50/57, 86-87
MPP Special Report	72/73
NetManage	64
Nokia Display Products	39
Northern Telecom	70-71
Novell	110-111
Oracle	5
Peregrine Systems	127
Printronix	60
Progress Software	54-55
Proteon	69
Ricoh	24
Santa Cruz Operations	48
SAS Institute	90-91
Seer Technology	30-31
Siemens Nixdorf	74
Silicon Graphics	87
Speedware	68-69
Sprint	39
Sun Microsystems	84-85, 118-119
SunSoft	13, 50-51
Symantec	21
Symbios Logic	47
3Com	102
Toshiba	62-63
Traveling Software	79
UniKix	C3

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Marketplace Advertisers' Index
Pages 146-152

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Secure It	(800) 451-7582
Spectra Equipment	(800) 745-1233

Companies in this issue

Page number refers to page on which story begins

3Com Corp. 32,52
3M Co. 24

A

4Front Technologies, Inc. 86
Aberdeen Group 39,49
Acer America Corp. 46
Adesa Corp. 49
Adobe Systems, Inc. 40
Advanced Manufacturing Research, Inc. 75
AER Energy Resources, Inc. 46
Allied Signal, Inc. 7,8
Amdahl Corp. 82
America Online, Inc. 61,159
American Express Services Co. Cover1
American Western Life 120
Andersen & Lemke 52
Andersen Consulting 8
Andyne Computer Ltd. 157
Apple Computer, Inc. 6,16,40,46,52
Argent Software 86
Artisoft, Inc. 73
Associated Grocers, Inc. 7
AT&T Corp. 61,69
AT&T Global Information Solutions 82
Atria Software, Inc. 97
Autodesk, Inc. 75
Avanti Technology, Inc. 8

B

BankAmerica Corp. 16
Baxter International 8
Bell Atlantic Business Systems Services 99
Berlx Laboratories 14
Bio-Rad Labs, Inc. 7
Bitz n' Bytes 6
Black & White Software, Inc. 58
BMC Software, Inc. 89
Boole & Babbage, Inc. 115
Borland International, Inc. 8,97
Browning-Ferris Industries, Inc. 40
Burlington Coat Factory Warehouse Corp. 12

C

Cabletron Systems, Inc. Cover1,32,61,68
CB Commercial, Inc. 28
Change Lab International 4
Charles Schwab & Co. 12
Chemical Banking Corp. 49
Chevron Corp. 75,159
Cheyenne Software, Inc. Cover1,115
Chipcom Corp. 58
Chrysler Corp. 92
Chubb & Son, Inc. 89
Circle Systems, Inc. 46
Cisco Systems, Inc. 12,52
Cognos Corp. 157
Compaq Computer Corp. Cover1,8, 12,14,49
CompuServe, Inc. 61
Computer Associates International, Inc. 8,157
Computer Literacy Bookshops, Inc. 133
Computer Tyme, Inc. 8
ComputerSite Engineering, Inc. Cover1
Contingency Planning Research, Inc. Cover1
Corel Corp. 57
Corporate Software, Inc. 32
Cray Research, Inc. 82
CSC Information Technology Consulting 99

D

Dataquest, Inc. Cover1,6,8,20,46
DayStar Digital, Inc. 6
Decisis, Inc. Cover1,12,52,68
Dell Computer Corp. 12,14,46
Delmarva Power & Light Co. 68
Deloitte & Touche 73
Delphi Internet Services Corp. 68
Digital Equipment Corp. 6,10,14,39, 82,86,115
Digital Research, Inc. 2
Digital Transmission Services, Inc. 69
Dlouhy Investments 157
Dr Pepper Co./The Seven-Up Co. Cover1
DreamWorks SKG 8
Du Pont Co. 4

E

Eastman Chemical Co. 75,159
Elkay Manufacturing Co. Cover1
Enterprise Information Systems Co. 4
Entex Information Services, Inc. 99
Epilogue Technology Corp. 8
Ernst & Young 49
Exchange Resources, Inc. Cover1
Express Systems, Inc. 135

F

Farabi Technology Corp. 86
Farm Credit Corp. Cover1
FedEx Corp. 12
FirePower Systems, Inc. 46
First Albany Corp. 157
First Union Corp. 4
Fiserv, Inc. Cover1
Forrester Research, Inc. 16,52
Four Seasons Software, Inc. 97
Frye Computer Systems, Inc. 115,120
Fujitsu Open Systems Solutions, Inc. 58
Fujitsu Personal Systems, Inc. 68

G

Gartner Group, Inc. 49,53,92,99,135
Gateway 2000, Inc. 14
Gemini Consulting, Inc. 61
General Electric Aerospace Systems 4
General Magic, Inc. 69
General Motors Corp. 32
Geoworks 69
Gillespie, Inc. 16
Gupta Corp. Cover1

H

Hammer & Co. 108
Hewlett-Packard Co. 7,12,14,39,46, 53,65,68,89,115
Horizon Technology, Inc. 115
Hughes LAN Systems, Inc. 58

I

IBM Cover1,14,16,39,40,46,53,68,69,86
IBM Credit Corp. 99
IBM PC Co. 8
ICL 14
Infinite Technologies, Inc. 8
Intek Technologies, Inc. 97
Intel Corp. 12,14,46,49,57,115,122
Internal Revenue Service Cover1
International Data Corp. Cover1,10,24, 65,68,135
International Technology Group 32
Intuit, Inc. 69
Iona Technologies Ltd. 14

J

J. P. Morgan & Co. Cover1
Jack Morton Productions, Inc. 6

K

K&M Associates 120
Kansas City Southern Railway Co. Cover1
Kasten-Chase Applied Research 52
Kentucky Housing Corp. 120
Kidasa Software, Inc. 58
Kisco Information Systems 86
Klever Computers, Inc. 58
KnowledgeWare, Inc. 92
KNX Corp. 52

L

Lahey-Hitchcock Clinic 68
LeFiell Manufacturing Co. 32
Legent Corp. 89
Link Resources Corp. 14
Lockheed Martin Corp. 4
Logica, Inc. 14
Loral Corp. 32
Lotus Development Corp. 8,46,61,69,73,89

M

Madge Networks, Inc. 61
MapInfo Corp. 28,40
Marsh & McLennan Co. 75
Martin Marietta Corp. 4
MasterCard International, Inc. 4
McAfee Associates, Inc. 115
McCaw Cellular Communications, Inc. 69
McConnell Consulting Co. 20
MCI Communications Corp. Cover1,16
MediaLand Ltd. 46
Mellon Bank Corp. Cover1
Mergent International, Inc. 75
Meta Group, Inc. 53
Microcom, Inc. 73
Microsoft Corp. Cover1,2,6,8,12,14,16,40, 46,49,52,58,61,89,97,99,115,120,135,159
MidCore Software, Inc. 89
Minnegasco, Inc. 14
Minnesota Mutual Life Insurance Co. 53
Minolta Corp. 49
Monash Information Services 14
Mooradian's Furniture, Inc. 40
Morrison-Knudsen Corp. 159
Mortice Kerns Systems, Inc. 97
Motorola, Inc. 69

N

NEC Technologies, Inc. 46,49
NetEdge, Inc. 24
NetLabs, Inc. 32
NetLinks Technology, Inc. 14
Netpower, Inc. 49
Netscape Communications Corp. 16,68,73
Network General Corp. 20
Network Integration Consultants 57
Newbridge Networks, Inc. 24
Nissan Motor Corp. 99
Norand Corp. 14
Novell, Inc. 8,12,16,39,49,52,61,73,115,120

O

OnDemand Software & Services, Inc. 115
Open Market, Inc. 16
Oracle Corp. 8,16,20,28,32,89,97
Osteonics, Inc. Cover1
Owens-Corning Fiberglass Corp. 2

P

Packard Bell Co. 46
Palindrome Corp. Cover1
Petro Canada 53
Philip Morris Co. 46
Philips Electronics 46
Piper-Jaffray, Inc. 99
Platinum Software Corp. 159
Platinum Technology, Inc. 157
Powersoft 159
Primary Access Corp. 32
Proxim, Inc. 68
Prudential Securities, Inc. 133

Q

Quality Engineering Software, Inc. 89
Quality Technology Decisions, Inc. 40
Quantum Books, Inc. 133

R

R. R. Donnelly & Sons Co. 32
Racotek, Inc. 14,69
Rad Technologies, Inc. 65
Radius, Inc. 6
Raytheon Co. 32
Reply Corp. 8
RSA Data Security, Inc. 73
Ryder System, Inc. Cover1

S

Saber Software Corp. 115,116,120
Salomon Brothers, Inc. 82
SAP AG 75
SAP America, Inc. 159
Seagate Technology, Inc. 32
Service Quality Institute 40
Shawmut Bank NA 32
Shiva Corp. 53
Siemens/Nixdorf Information Systems, Inc. 49
Sigma Data, Inc. 46
Sigma-Diagnostics Cover1
Silicon Graphics, Inc. 8
SkyTel Corp. 69
Smallworld Systems, Inc. 65
Sonix Communications Ltd. 32
Sony Corp. 2
Southern New England Telephone 89
Spectrum Information Technologies, Inc. 8
Spirit of America National Bank 120
Spyglass, Inc. 16
SQA, Inc. 97
SRI, Inc. 73
Sterling Software, Inc. 92
Stratacom, Inc. 24
Strategic Mapping, Inc. 28
Strategic Networks Consulting, Inc. 20
Sun Microsystems, Inc. 12,16,86
Sungard Recovery Services, Inc. Cover1
SunSoft, Inc. 12,39,49,68,115
Sybase, Inc. 8,49,97,159
Sycom Technologies, Inc. 46
Symantec Corp. 115,120

T

Tandem Corp. 69
TASC, Inc. 28
Tektronix, Inc. 39,46
Telegroup, Inc. 6
TeleVideo Multimedia, Inc. 46
Texas Instruments, Inc. Cover1,89,108
TGI Friday's, Inc. Cover1
The Charles Schwab Corp. Cover1
The Chase Manhattan Bank NA 99
The Clipper Group, Inc. 78
The Hertz Corp. 14
The Mutual Life Assurance Co. 14
The Standish Group International, Inc. 32
The Yankee Group 24,52
Toshiba Corp. 46
Towers Perrin 108
Tracor, Inc. 32
TransFreight Systems, Inc. 40
Treasury Services Corp. 82
Tricord Systems, Inc. 57
Trinzic Corp. 157
TriTeal Corp. 39

U

U.S. Robotics, Inc. 52,68
UB Networks, Inc. Cover1
Unilever 108
Unisys Corp. Cover1,32,99
United Parcel Service, Inc. 82
Unocal Corp. 20

V

VA Research, Inc. 10
Vantive Corp. 159
Veritas Software Corp. 86
Viacom, Inc. 14
VideoLogic, Inc. 46
Visa International, Inc. 4
Visioneer, Inc. 46

W

Wachovia Bank 4
Wayfarer Communications, Inc. 69
Whirlpool Europe Milan 108
Winfinet Software, Inc. 58
Wireless Telecom, Inc. 69
WorkGroup Technologies, Inc. 14
Worldtalk Corp. 68

X

Xcellenet, Inc. 69
Xerox Corp. 4
Xircom, Inc. 8,52

Gainers

Percent

Adobe Systems Inc.	31.1
Parallan Computer	23.1
NetFrame	22.9
Tektronix Inc.	16.5
Frame Technology(H)	16.1
Cypress Semiconductor Corp.	15.6
Stratacom Inc.(H)	14.8
Micron Technology(H)	12.5

Dollar

Adobe Systems Inc.	10.75
Micron Technology(H)	8.75
Tektronix Inc.	8.00
Stratacom Inc.(H)	5.88
Texas Instruments	5.25
Intel Corp.(H)	5.13
Atmel Corp.	4.25
Cypress Semiconductor Corp.	4.25

Losers

Percent

Cray Computer	-75.0
Intelligent Info. Systems	-27.1
General Datacomm Inds.	-21.3
Zeos International Ltd.	-19.1
Rexon Inc.	-16.7
Merisel(L)	-16.5
Rasterops	-15.0
CrossComm	-12.4

Dollar

General Datacomm Inds.	-3.75
Zeos International Ltd.	-2.63
Filenet Corp.	-1.75
Parametric Technology	-1.75
Sequent Computer Sys.	-1.75
Oracle Corp.(H)	-1.63
CrossComm	-1.50
Lotus Development	-1.50

Data access stocks perking up

Suppliers of data access tools are enjoying good times these days. The software helps users retrieve corporate data and repair reports without understanding database structures or search languages.

One Wall Street newcomer to this arena, **Andyne Computer Ltd. (ADYNF)** in Kingston, Ontario, is trying to make inroads against leaders **Business Objects S.A. (BOBJY)** in Puteaux, France, and **Cognos Corp. (COGNF)** in Burlington, Mass.

According to Ewa Morawska, an analyst at Dlouhy Investments in Montreal, the major factors affecting Andyne shares are the acquisition of Standard Generalized Markup Language (SGML) technology, the handling of its international sales by Computer Associates International, Inc. and its new product, Pablo. Do not look for an immediate impact just yet, though. "They are not showing as high growth multiples as Cognos or Business Objects, but they will in the latter half of the fiscal year," Morawska said.

SGML technology, which helps with text-based data access rather than numerical information, will be significant to Internet users performing key word searches. Morawska said the technology will not affect Andyne's fortunes until product rollouts next year.

Platinum Technology, Inc. (PLAT) in Oakbrook Terrace, Ill., will offer data access via its pending acquisition of **Trinzic Corp. (TRNZ)** in May. Combined with its other recent acquisitions, Platinum will be able to provide data access software integrated with data management, replication and administration tools.

"Combine access with all the other pieces, and they've put together a pretty attractive package," said David Benhaim, vice president of First Albany Corp. in Boston. "The only thing holding the stock back is that Wall Street does not like major acquisitions."

With expanding sales, analysts predict an open market. "Anyone involved in this market is going to do well for at least the next year," Morawska said. — *Tim Ouellette*

Interest in data access

Company	March 23 price	Average daily volume last week
Business Objects	32	41,000
Cognos	19 7/8	63,000
Andyne	5 3/4	15,000
Platinum	21 3/8	247,000

Exch	52-Week Range			Mar. 24 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						Off 0.00%
OTC	59.75	20.13	3 COM Corp.	57.38	2.69	4.9
NYS	44.38	36.25	AMERITECH Corp.	42.63	-0.50	-1.2
NYS	57.13	47.25	AT&T	52.63	-0.38	-0.7
OTC	19.75	12.75	Banyan Systems Inc.	16.81	-0.56	-3.2
OTC	39.50	18.63	Bay Networks Inc.	36.88	2.00	5.7
NYS	58.38	48.38	Bell Atlantic Corp.	54.00	0.63	1.2
NYS	63.50	50.50	Bellsouth Corp.	60.25	1.25	2.1
NYS	22.25	10.00	Bolt, Beranek & Newman	21.00	0.38	1.8
OTC	19.75	8.00	Brooktrout Technology	17.50	0.50	2.9
NYS	52.88	33.06	Cabletron Systems	43.25	0.50	1.2
OTC	39.25	10.00	Centigram Communications	15.50	-1.25	-7.5
OTC	50.50	21.00	Chipcom Corp.	42.50	-0.63	-1.4
OTC	39.50	18.63	Cisco Systems Inc.	36.38	1.38	3.9
OTC	13.63	6.13	Compression Labs Inc.	9.13	-0.25	-2.7
OTC	10.50	5.13	Computer Network Tech.	8.38	-0.56	-6.3
OTC	14.50	7.50	CrossComm	10.63	-1.50	-12.4
OTC	4.13	2.00	Data Switch Corp.	3.56	0.31	9.6
OTC	39.00	17.88	DSC Communications	33.25	-1.50	-4.3
OTC	39.25	10.00	FORE Systems Inc.	36.75	1.63	4.6
NYS	35.88	10.00	General Datacomm Inds.	13.88	-3.75	-21.3
NYS	34.50	29.50	GTE Corp. (H)	34.00	-0.25	-0.7
NYS	102.63	77.00	ITT Corp. (H)	102.50	1.13	1.1
OTC	25.88	17.25	MCI Communications Corp.	19.94	-0.44	-2.1
OTC	15.75	6.75	Micom Communications Corp.	6.75	-0.63	-8.5
OTC	8.63	4.50	Microcom Inc.	11.63	-0.25	-2.1
OTC	10.50	4.00	Netrix Corp.	7.13	-0.63	-8.1
OTC	7.38	3.25	Network Computing Devices	6.88	0.13	1.9
NYS	27.88	7.38	Network Equipment Tech.	26.13	0.25	1.0
NYS	29.75	13.88	Network General (H)	29.50	0.75	2.6
NYS	60.00	26.50	Newbridge Networks Corp.	33.88	2.13	6.7
NYS	39.63	26.00	Northern Telecom Ltd. (H)	39.63	1.63	4.3
OTC	21.50	13.38	Novell Inc.	19.75	0.88	4.6
NYS	41.13	33.25	Nynex Corp. (H)	41.13	0.63	1.5
OTC	27.00	15.50	Octel Communications Corp.	21.25	0.25	1.2
OTC	37.50	12.00	Optical Data Systems Inc.	34.00	0.25	0.7
OTC	7.00	2.13	Penril Data Comm Networks	3.38	0.13	3.8
OTC	33.50	10.00	Picturetel Corp.	33.50	2.38	7.6
OTC	8.13	2.13	Proteon Inc.	6.13	-0.25	-3.9
OTC	10.50	2.75	Racotek Inc.	7.00	0.50	7.7
OTC	9.63	3.50	Retix	4.25	-0.50	-10.5
NYS	24.50	12.44	Scientific Atlanta Inc.	24.13	0.13	0.5
NYS	44.38	38.50	Southwestern Bell Corp.	42.50	0.13	0.3
NYS	40.13	25.88	Sprint Corp.	30.38	1.00	3.4
OTC	31.63	13.38	Standard Microsystems Corp.	15.88	-0.75	-4.5
OTC	45.75	8.50	Stratacom Inc. (H)	45.50	5.88	14.8
OTC	13.38	3.88	Telebit Corp.	7.13	-0.13	-1.7
OTC	67.25	24.00	US Robotics (H)	67.25	3.75	5.9
NYS	43.75	34.63	US West Inc.	41.13	1.13	2.8
OTC	25.50	12.75	Xircom	13.50	-1.31	-8.9
OTC	28.00	8.00	Xylogics Inc.	19.75	0.25	1.3
PCs and Workstations						Up 1.19%
OTC	7.00	3.50	Advanced Logic Research	4.50	-0.25	-5.3
OTC	48.06	24.63	Apple Computer Inc.	37.75	2.50	7.1
OTC	22.50	10.38	AST Research Inc.	16.13	0.88	5.7
NYS	44.38	29.50	Compaq Computer Corp.	34.63	1.50	4.5
OTC	71.75	51.25	Dell Computer Corp.	64.63	0.38	0.6
OTC	25.25	9.25	Gateway 2000 Inc.	18.75	-0.13	-0.7
NYS	124.00	71.88	Hewlett Packard Co. (H)	124.00	3.63	3.0
NYS	37.00	18.75	Silicon Graphics (H)	37.00	2.88	8.4
OTC	37.63	18.75	Sun Microsystems Inc.	35.50	1.63	4.8
NYS	52.38	30.75	Tandy Corp.	48.88	1.63	3.4
OTC	16.00	2.38	Zeos International Ltd.	11.13	-2.63	-19.1
Large Systems						Off 1.45%
ASE	12.13	5.25	Amdahl Corp.	12.13	0.88	7.8
NYS	8.88	4.38	Convex Computer	6.38	-0.13	-1.9
OTC	2.63	0.25	Cray Computer	0.25	-0.75	-75.0
NYS	31.00	14.63	Cray Research Inc.	17.88	-0.38	-2.1
NYS	12.00	6.63	Data General Corp.	7.13	-0.50	-6.6
NYS	38.75	18.25	Digital Equipment Corp.	34.88	2.63	8.1
OTC	6.38	1.72	Encore Computer Corp.	6.38	0.16	1.6
OTC	18.50	6.50	Harris Computer Systems Cor(H)	17.94	0.81	4.7
NYS	84.00	51.38	IBM (H)	84.00	0.75	0.9
OTC	16.25	5.00	NetFrame	7.38	1.38	22.9
OTC	11.50	3.63	Parallan Computer	6.00	1.13	23.1
OTC	16.00	5.38	Pyramid Technology	15.88	0.00	0.0
OTC	21.25	11.13	Sequent Computer Sys.	17.00	-1.75	-9.3
OTC	6.13	3.13	Sequoia Systems Inc.	3.94	-0.25	-6.0
NYS	39.88	22.88	Stratus Computer Inc.	33.00	0.63	1.9
NYS	19.75	10.50	Tandem Computers Inc.	16.75	-0.75	-4.3
NYS	16.00	3.88	TriCord Systems	5.13	0.13	2.5
NYS	15.50	8.25	Unisys Corp.	9.25	0.13	1.4
Software						Up 0.29%
OTC	48.00	21.50	Adobe Systems Inc.	48.00	10.75	28.9
OTC	6.13	2.50	American Software Inc.	3.88	-0.06	-1.6
OTC	42.50	23.25	Autodesk Inc. (H)	42.25	1.75	4.3
OTC	5.38	1.75	Bachman Info. Systems	4.00	-0.50	-11.1
OTC	29.00	20.50	BGS Systems Inc.	28.00	0.25	0.9
OTC	69.75	40.25	BMC Software Inc.	64.50	-0.50	-0.8
OTC	30.50	15.31	Boole & Babbage	29.00	0.50	1.7
OTC	14.75	6.00	Borland Int'l Inc.	8.94	-1.06	-10.6
OTC	22.25	5.75	Brock Control Systems Inc.	6.25	0.00	0.0
OTC	4.00	1.78	CE Software	3.00	-0.13	-4.0
ASE	28.38	6.25	Cheyenne Software Inc.	14.75	-0.63	-4.1
OTC	21.88	9.75	Cognos Inc.	20.13	-0.63	-3.0
NYS	64.38	27.38	Computer Associates (H)	63.25	-0.50	-0.8
NYS	6.13	2.50	Computervision Corp.	5.13	-0.25	-4.7
OTC	49.25	31.25	Compuware Corp.	37.00	0.38	1.0
OTC	17.25	9.00	Comshare Inc.	16.75	0.50	3.1
OTC	16.75	10.13	Corel Corp.	15.00	0.75	5.3
OTC	16.00	7.25	Dataware Technologies Inc.	16.00	1.50	10.3
OTC	5.75	2.25	Easel Corp.	2.56	0.06	2.5
OTC	36.25	14.25	Filenet Corp.	32.75	-1.75	-5.1
OTC	8.75	3.00	4th Dimension	4.63	-0.13	-2.6
OTC	20.75	8.50	Frame Technology (H)	20.75	2.88	16.1
OTC	35.25	11.50	FTP Software Inc.	31.38	1.44	4.8
OTC	10.25	7.00	Group I Software	9.50	-0.13	-1.3
OTC	30.25	6.75	Gupta	10.88	-0.50	-4.4
OTC	10.75	4.63	Hogan Systems Inc.	5.75	-0.50	-8.0
OTC	46.50	18.00	Hyperion Software Corp.	43.75	-0.25	-0.6
OTC	18.25	11.25	Information Resources	12.75	0.00	0.0
OTC	39.75	14.25	Informix Corp.	36.63	-0.63	-1.7
OTC	14.38	7.38	Intergraph Corp.	12.25	-0.50	-3.9
OTC	7.88	2.50	Interleaf Inc.	5.00	0.00	0.0
OTC	18.25	8.63	Intersolv Inc.	15.63	0.50	3.3
OTC	77.50	27.00	Intuit Inc.	77.50	2.25	3.0
OTC	37.25	19.00	Legent Corp.	33.25	-0.13	-0.4
OTC	76.75	29.75	Lotus Development	40.00	-1.50	-3.6
OTC	15.00	4.38	Magic Software Enterprises	5.38	0.38	7.5
OTC	14.50	6.00	Manugistics Group Inc.	12.63	-0.88	-6.5
OTC	31.75	14.75	MapInfo Corp. (H)	31.25	0.50	1.6
OTC	6.13	1.44	MathSoft	3.13	0.00	0.0
OTC	27.75	6.50	McAfee Associates	26.75	1.50	5.9
OTC	16.13	9.38	Mentor Graphics	14.25	-0.13	-0.9
OTC	20.00	11.00	Micro Focus	11.13	-0.38	-3.3
OTC	8.75	4.63	Micrografx Inc.	6.25	-0.25	-3.8
OTC	73.63	41.00	Microsoft Corp.	73.63	1.88	2.6
OTC	45.00	11.25	NetManage Inc.	38.00	-1.00	-2.6
OTC	34.63	17.50	Oracle Corp. (H)	32.00	-1.63	-4.8
OTC	44.25	21.50	Parametric Technology	39.38	-1.75	-4.3
OTC	24.25	13.38	ParcPlace Systems Inc.	15.75	-1.25	-7.4
OTC	45.75	13.00	Peoplesoft	43.63	0.25	0.6
OTC	8.50	4.38	Phoenix Technologies	7.50	0.00	0.0
OTC	14.75	3.50	Platinum Software	11.50	0.38	3.4
OTC	25.25	11.00	Platinum Technology	21.50	1.13	5.5
OTC	57.75	27.00	Progress Software Corp.	57.25	3.00	5.5
OTC	4.50	1.88	Quarterdeck Corp. (H)	4.13	0.09	2.3
OTC	18.75	9.50	Rainbow Technologies Inc.	18.00	0.63	3.6
OTC	6.63	2.00	Rasterops	4.25	-0.75	-15.0
OTC	6.75	2.00	Ross Systems	5.00	0.38	8.1
OTC	13.00	0.50	Sapiens Intl. Corp. N.V.	3.50	-0.28	-7.4
OTC	28.88	9.75	Softkey International Inc.	28.50	1.00	3.6
OTC	7.63	3.00	Software Publishing Corp.	3.50	0.00	0.0
OTC	11.63	5.00	State of the Art	10.50	-0.38	-3.4
NYS	38.38	25.00	Sterling Software Inc.	36.50	-0.88	-2.3
OTC	15.13	3.63	Struct. Dynamics Research	8.63	-0.19	-2.1
OTC	57.00	35.25	Sybase Inc.	43.00	-0.44	-1.0
OTC	24.50	9.88	Symantec Corp. (H)	23.75	1.25	5.6
OTC	54.75	33.00	SynOpsys	50.75	-0.25	-0.5
OTC	28.63	10.63	System Software Assoc. (H)	28.50	1.50	5.6
OTC	7.75	3.25	Trinzic Corp.	7.13	0.19	2.7
OTC	29.00	7.88	ViewLogic Systems	9.00	0.13	1.4
OTC	23.25	12.25	VMark Software Inc.	13.63	0.63	4.8
OTC	12.00	5.50	Walker Interactive Systems	7.00	0.38	5.7
OTC	55.50	29.25	Wall Data Inc.	50.13	1.38	2.8
Semiconductors						Up 4.07%
NYS	35.63	22.25	Advanced Micro Devices	35.25	0.75	2.2
NYS	27.50	16.34	Analog Devices Inc. (H)	27.00	-0.13	-0.5
OTC	39.88	19.75	Atmel Corp.	39.88	4.25	11.9
OTC	8.88	3.63	Chips and Technologies	7.88	0.38	5.0
OTC	38.88	21.00	Cirrus Logic	36.50	-1.25	-3.3
NYS	31.50	13.88	Cypress Semiconductor Corp.	31.50	4.25	15.6
NYS	20.13	13.38	Dallas Semiconductor	17.63	0.63	3.7
OTC	31.75	14.75	Integrated Silicon Systems (H)	30.75	1.50	5.1
OTC	86.50	56.00	Intel Corp. (H)	86.50	5.13	6.3
NYS	57.75	16.75	LSI Logic Corp.	57.75	3.38	6.2
OTC	27.13	14.75	Lattice Semiconductor	25.75	0.63	2.5
NYS	78.63	28.25	Micron Technology (H)	78.63	8.75	12.5
NYS	64.75	42.13	Motorola Inc.	55.50	0.13	0.2
NYS	22.38	14.38	National Semiconductor	18.50	1.38	8.0
OTC	25.88	6.75	Sierra Semiconductor	25.88	1.75	7.3
NYS	93.75	63.25	Texas Instruments	93.75	5.25	5.9
OTC	18.75	10.25	VLSI Technology (H)	18.25	0.25	1.4
OTC	8.25	1.78	Weitek	3.38	-0.25	-6.9
ASE	19.50	11.50	Western Digital Corp.	13.50	-0.38	-2.7
OTC	71.25	29.00	Xilinx	68.50	0.00	0.0
OTC	38.50	24.75	Zilog Inc. (H)	37.63	1.81	5.1
Peripherals and Subsystems						Up 0.45%
OTC	27.75	14.50	American Power Conversion	18.75	-0.38	-2.0
OTC	27.25	15.75	Banctec Inc.	16.50	0.38	2.3
OTC	5.75	3.25	Cambex Corp.	4.75	0.50	11.8
ASE	4.25	1.38	Cognitronics Corp.	2.81	0.31	12.5
NYS	16.25	9.00	Conner Peripherals	9.63	-0.50	-4.9
OTC	24.00	9.75	Creative Technologies Inc.	12.75	0.13	1.0
OTC	9.25	3.50	Data Race Inc.	8.50	0.00	11.5
ASE	7.63	4.13	Dataram Corp.	4.88	-0.25	-4.9
NYS	24.00	12.38	EMC Corp.	17.13	1.63	10.5
OTC	18.88	3.50	Emulex Corp. (H)	18.88	1.00	5.6
OTC	19.50	11.25	Evans & Sutherland	15.75	0.50	3.3
OTC	24.00	14.00	Exabyte	16.94	0.94	5.9
OTC	9.25	1.88	Intelligent Info. Systems	2.69	-1.00	-27.1
OTC	7.81	1.59	Iomega Corp.	7.06	0.00	0.0
OTC	8.25	2.00	IPL Systems Inc.	4.38	0.00	0.0
OTC	32.75	17.00	Komag Inc. (H)	32.25	0.13	0.4
OTC	8.13	2.63	Maxtor Corp.	4.25	-0.50	-10.5
OTC	11.50	4.88	Micropolis Corp.	5.13	-0.25	-4.7
OTC	20.25	9.25	Pinnacle Micro Inc.	12.25	-0.38	-3.0
OTC	28.75	5.16	Printronix Inc.	19.50	1.50	8.3
NYS	10.75	5.88	QMS Inc. (L)	6.00	-0.25	-4.0
OTC	19.38	11.63	Quantum Corp.	14.06	-0.19	-1.3
OTC	17.25	7.38	Radius Inc.	10.75	0.00	0.0
NYS	14.13	6.38	Recognition International	6.88	0.25	3.8
OTC	7.00	4.13	Rexon Inc.	4.38	-0.88	-16.7
OTC	28.00	18.63	Seagate Technology	26.38	1.00	3.9
NYS	39.13	18.50	Storage Technology (L)	18.75	-0.88	-4.5
NYS	42.38	27.38	Tektronix Inc.	42.38	6.00	16.5
NYS	120.25	90.63	Xerox Corp.	118.00	-0.63	-0.5
Services						Off 0.76%
OTC	21.00	12.91	American Mgmt. Systems	18.50	-1.50	-7.5
NYS	4.25	1.75	Anacomp Inc.	1.75	-0.13	-6.7
OTC	22.25	14.50	Analysts Int'l.	22.25	1.25	6.0
NYS	64.88	47.63	Auto Data Processing (H)	64.63	0.88	1.4
OTC	32.00	14.00	Cambridge Tech. Partners	31.50	1.50	5.0
NYS	34.38	20.50	Ceridian Corp. (H)	34.25	0.88	2.6
NYS	26.50	17.75	Comdisco Inc. (H)	25.75	0.38	1.5
OTC	18.00	8.25	Computer Horizons	16.75	0.00	0.0
NYS	52.63	35.13	Computer Sciences	52.00	2.13	4.3
NYS	10.88	7.50	Computer Task Group (H)	10.50	0.13	1.2
NYS	21.88	6.75	CompUSA Inc. (H)	20.38	-1.00	-4.7
OTC	11.38	5.38	Control Data Systems Inc.	6.63	-0.50	-7.0
OTC	12.13	6.13	Egghead Discount Software	9.38	0.13	1.4
NYS	41.38	32.75	General Motors E (EDS)	40.50	0.13	0.3
OTC	18.25	6.88	Inacom Corp.	8.00	-0.56	-6.6
OTC	26.00	7.50	Intelligent Electronics	9.75	-0.25	-2.5
OTC	20.50	3.88	Merisel (L)	4.13	-0.81	-16.5
OTC	30.75	8.88	Micrage Inc. (L)	9.13	-0.13	-1.4
OTC	47.75	28.50	Paychex (H)	46.25	0.75	1.6
NYS	47.75	25.75	Policy Management Sys.	45.00	0.38	0.8
NYS	28.63	19.75	Reynolds and Reynolds (H)	28.13	0.50	1.8
OTC	24.75	16.75	SEI Corp.	18.88	0.13	0.7
OTC	37.88	22.13	Shared Medical Systems	36.00	1.06	3.0
OTC	8.00	4.00	SHL Systemhouse	6.06	-0.06	-1.0
OTC	21.50	9.25	Software Spectrum Inc.	17.25	0.75	4.5
OTC	47.50	31.50	Sungard Data Systems (H)	45.00	-1.00	-2.2

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Client/server support gets good ratings from users

By Rosemary Cafasso

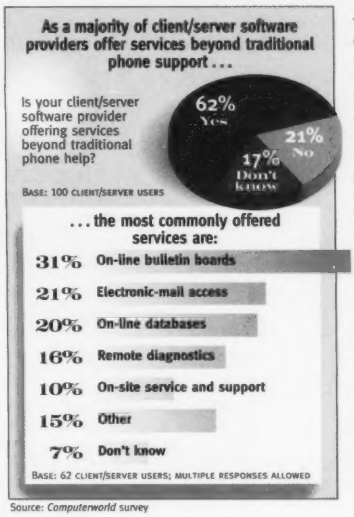
Even though some client/server users have seen their share of service snafus, they still give their software providers overall good grades when it comes to technical support.

In fact, most users think their vendors are doing an average to very good job with technical support, according to a *Computerworld* survey last week of 100 information systems executives.

Several users interviewed separately explained that customers believe software providers are doing the best they can, given the rapid growth many are experiencing and the complexities of client/server computing.

One reason some users are giving technical support overall good marks is that their vendors have expanded beyond traditional telephone support to a number of on-line services (see chart). These support products help users become more self-sufficient by providing them with access to the tools used by the help desk.

"It is an area where there's an opportunity for further improvement, but they are doing an admirable job," said Jack Spurgeon, director of the systems and computer services division at Eastman Chemical Co. in Kingsport, Tenn., of his client/server software provider, SAP America, Inc.



Source: *Computerworld* survey

As one of the fastest growing applications companies, SAP is a high-profile example of such growing pains. Its R/3 software has been popular enough (see story, page 75) that the company is unable to meet the demand for SAP consulting expertise that users require.

Spurgeon, along with other SAP users, has complained in the past about the lack of SAP consultants or on-site support. Yet he said that the vendor is doing what it can to deliver hot-line and technical support.

Bob Washa, a technical manager in the corporate IS group at Chevron Corp. in San Ramon, Calif., is another SAP user who has seen a gap between the supply and demand of SAP expertise.

"Right now, the gap is showing, [but] my sense is they are able to handle the critical problems," he said.

Marquett Smith, a manager of technology and strategy at America Online, Inc. in Vienna, Va., uses a help desk package from Vantive Corp. in Mountain View, Calif. He gave the software provider an overall "good" rating but said he would like to see more support personnel.

Smith said Vantive is excellent when it comes to acknowledging complaints and does a satisfactory job in providing solutions.

However, for some client/server users, the issue is more problematic. Terry Tung, a senior IS manager at Morrison-Knudsen Corp. in Cleveland, said he is trying to upgrade to the latest version of Platinum Software Corp.'s financial software. "This is probably our darkest moment in our time with them so far," he said. This is because his company and Platinum cannot figure out the source of performance problems with the new release. He claimed Platinum is not being as helpful with database-related issues as he thinks it should be.

"The bottom line is not only do they have to know their product well, but they have to know Sybase well," Tung said. "That's our fundamental problem right now."

Platinum officials said it is company policy to work with customers on technical problems beyond their own application software. Kevin Dowling, vice president of marketing at Platinum, said he understood that Morrison-Knudsen had problems installing the new software in February but the problems had since been resolved.

However settled, Tung's story typifies the big challenge for client/server vendors today: trying to cover all bases to assist users with problems in technology areas beyond their own products.

SAP's R/3 implementations coming slowly. See page 75.

Calls of duty

The call-waiting light flashed impatiently last week at Heather Wright, an associate technical support engineer at Powersoft, a Sybase, Inc. company in Concord, Mass.

Snapping on her headset, she was soon walking a user named Bill through a series of questions to determine the scope of his problem. As it turned out, Bill's issue was not so much about the PowerBuilder application development tool set as it was about referential integrity error messages and the Sybase database management system.

Twelve minutes later, Wright determined she was unable to find an exact match to Bill's problem in the technical support database. She forwarded him to a Powersoft techical expert.

Welcome to the world of client/server technical support.

Increasingly, client/server companies such as Powersoft are asked to provide expertise on a range of technologies that go well beyond their own products.

In a one-hour period recently, Wright fielded calls on the following topics: a particular loading sequence of PowerBuilder 4.0 that set off an unidentified network glitch; objects and related difficulties with inheritance; DataWindows; printing documents; setting up columns; frozen cursors; stored procedures; interfacing with Powersoft's Watcom database; unidentified SQL messages; potential glitches in a Microsoft Corp. Open Database Connectivity driver; and a general protection fault error on an existing application.

Powersoft gets about 600 to 650 calls a day. It contracts with a survey company to get weekly feedback on its technical support. For the week ending March 17, 100-plus customers were asked if the firm's support staff was able to resolve their issues. Of that group, 75% said the support met or exceeded expectations; 25% said it was below expectations. — *Rosemary Cafasso*

Help desks

CONTINUED FROM COVER 1

combined help desk offers several benefits, they said. But most important, it gives users a single point of contact with someone who, they hope, can resolve any problem on the first call.

"As mainframes and PC networks get more integrated, users aren't sure who to call" when problems arise, said Wade Behrns, computer operations manager at Farm Credit Corp., an agricultural bank in Regina, Saskatchewan.

Combined support

Farm Credit set up its first central PC help desk earlier this year and plans to incorporate the mainframe side within the next 12 to 18 months, Behrns said. Workers will be trained to handle both types of calls, although some mainframe problems may still be referred to data center operators, he noted.



The regular shift rotation for mainframe operators at the University of Alberta in Edmonton now includes week-long stints on the help desk, said Grant Crawford, a manager in the school's computing and network services department. Workers are also being trained to handle both mainframe and PC problems. "Everyone's a generalist in this environment," Crawford said.

TGI Friday's, Inc. in Dallas plans this summer to put in place an integrated help desk staffed by a combination of workers with client/server and mainframe backgrounds, said Pamela Albacete, manager of IS operations at the restaurant chain.

Besides easing users' lives, the single help desk will make it easier to create a companywide problem resolution database and a problem tracking and reporting system, Albacete said.

That also played a role in Elkay Manufacturing Co.'s move to combine its mainframe, PC and telephone help desks last year. Mainframe operators generally did not log calls, which made it hard to identify and analyze problem trends, said John Payton, manager of computer operations at Elkay in Oak Brook, Ill.

Like other firms, Elkay was mainly motivated by demands from end users, who "wanted to talk to someone who could help them right away," Payton said. The company hopes by year's end the integrated help desk will be able to resolve 80% of problems on the first call — up from about 50% now, he added.

Dr Pepper/Seven-Up Corp. in Dallas combined help desks late last year, and its monthly tally of logged calls has jumped from about 600 to 900, operations manager Terry Gillespie said. Before, those extra calls "were probably going whichever way in search of a solution," she said.

However, not all AFCOM attendees were sold on the idea of a single help desk. Joseph Feliu, manager of the U.S. Postal Service's data center in San Mateo, Calif., said the post office's vast size requires that PC support be available in the field. "It's not feasible to have people call 1-800 numbers," he said.

Unix dominates high-end servers

Unix has been repeatedly pronounced leukemic — not dead but struggling to survive in the face of Windows' vigorous growth. To some extent, this negative prognosis was brought on by the patient itself because its handlers repeatedly claimed they were about to put Unix on the desktop.

The thinking behind this dubious maneuver better reflected the need to contest Microsoft than it did the needs of the PC marketplace. But never mind. Unix still might have made a fight of it at the desktop level if only its Common Desktop Environment could have shown up before Windows won the battle.

Now, everyone knows this was the wrong fight for Unix in the first place; its strengths lie on the server side of computing. The fact that another Microsoft product, Windows NT, aspires to fill that role doesn't mean that the outcome is going to be the same as at the desktop. On the contrary, Unix has many inherent advantages. Instead of getting weaker on the server side, it is getting stronger. Consider the following:

- Given its strong presence in universities, where it has been licensed at a token cost for 21 years, Unix continues to be a training environment for succeeding generations of computer science students. Microsoft would like to duplicate this feat with Windows NT, which will be welcomed as an addition to the fold. But talk about a head start...
- Although Windows 3.x has the desktop numbers, Unix has a few stats on its side as well. At UniForum, Novell President Bob Frankenberg noted that Unix vendors shipped 1.2 million copies of System V last year.
- Large system suppliers, including Hewlett-Packard, which is capitalizing on the downsizing of mainframes, have united in backing Unix. Digital's OSF/1 is an interesting, if little-heralded version, and IBM is making sure AIX is available as an alternative to VM and MVS on the mainframe. Throw in providers such as Sequent, Sun Microsystems and Silicon Graphics and the customers of these suppliers represent a formidable chunk of the server community.
- Unix and related technologies, the C programming language and the TCP/IP networking protocol have proved themselves and are now standards. As Frankenberg noted, Unix lies behind services such as telephone systems, airline reservation systems, banking and most important, the Internet. It's hard to displace a standard, and the Internet represents a wonderful new source of vitality for the Unix community.



The diversity of the Unix community, commonly viewed as a weakness, is also one of its greatest strengths.

Charles Babcock

- The spread of PCs has made networking more of an issue than ever before. The Berkeley version of Unix incorporated the notion of the flexible network socket that can be called on as needed. Under Unix, network sockets can be created to make cross-system connections and then destroyed, which gives Unix the profile of a lean, effective network server.
- The diversity of the Unix community, commonly viewed as a weakness, is also one of its greatest strengths. Sun, Silicon Graphics, Digital and HP are hard at work on network, object and distributed computing innovations that will continue to advance the capabilities of the Unix environment. The difference between these efforts and those of the diverse PC software community is that many Unix parties are contributing to system software enhancements; Microsoft dominates system software on the PC side.
- The future of better, faster, cheaper hardware that is scalable in large systems lies with parallel processing, the rapid emergence of which is almost exclusively a Unix phenomenon. Pyramid Technology, Tandem Computers, IBM, NCube, AT&T and Cray Computer each run a version of Unix as a parallel operating system. Even Intel's Beaverton, Ore., Scalable Systems Division, which produces the Paragon parallel machine, uses Unix. As parallel processing grows into general-purpose configurations, Unix will dominate the field.

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Inside Lines

Beam me in, Scotty

Wireless data pioneer Racotek is still searching for profits. So why are some big names in software seeking it out? Sources say both Xcellenet and Informix have gone to Racotek in search of its wireless knowledge. Xcellenet needs a partner with strong wireless integration skills to round out its hot RemoteWare application, while Informix needs to respond to Oracle and Sybase's moves in the wireless arena, sources say. Partnerships are looming, but they're not done deals yet, sources say.

Revisionist strategy I

After repeatedly claiming it would not put the Windows 95 interface onto Windows NT before releasing Cairo, Microsoft this week will announce plans to do just that, a source close to the company said. Such a move was being considered at Comdex/Fall '94 but was deemed unlikely because it would delay Cairo, the next major update of NT. Microsoft's change of heart means that what customers want is what they get. Still, the source denied the change will further delay Cairo, which senior executives said earlier this month is now set for delivery late next year.

Revisionist strategy II, or seal, schmeel

Apparently Microsoft does not think it's highly-vaunted Windows 95 logo is important after all. For months, Microsoft has positioned the logo as the "Good Housekeeping seal of approval" to ensure that third-party Windows 95 applications run well with Windows 95. Last week, Cameron Myhrvold, developer evangelist at Microsoft, said the logo is *not* that significant. "It's not a big issue to me whether people support the logo or not. We're talking about a logo the size of a postage stamp," he said. And developers won't have to provide NT compatibility in their Windows 95 products within 90 days after Windows 95 ships, as was required before, he said.

April showers bring new Pentium systems

Hewlett-Packard and Compaq are getting ready for April announcements of new Pentium systems aimed at the consumer and small-business markets. Industry sources said systems from both companies will feature the usual bells and whistles — dual- and quad-speed CD-ROMs, 16-bit audio, external speakers, integrated telephony and call-answering features. Compaq is expected to announce all-in-one Presario models, which integrate the computer and terminal in one unit.

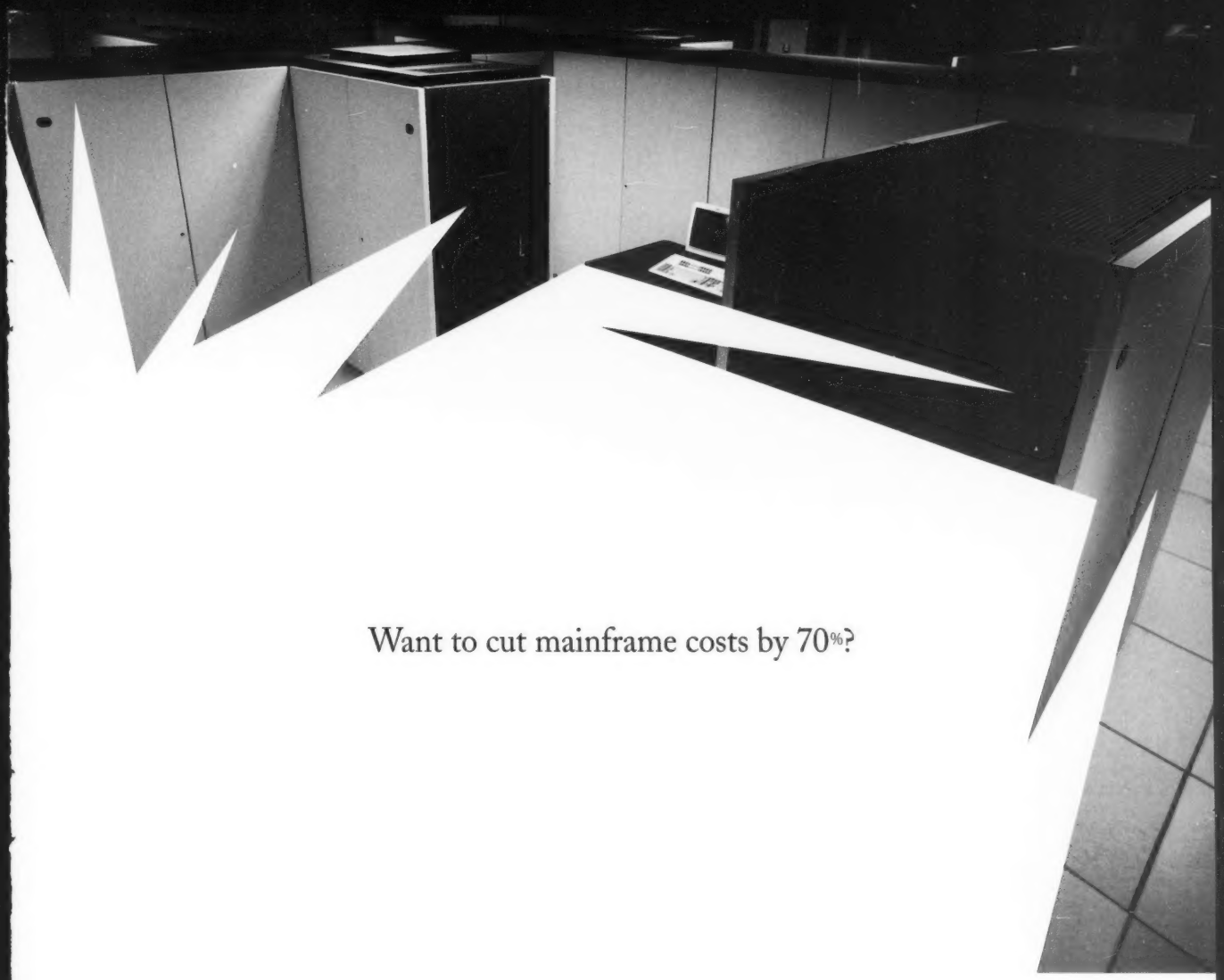
What manner of beast is this?

Client/server was the main thing on just about everyone's mind at last week's Association for Computer Operations Management conference for data center managers. And no wonder. At one session attended by about 350 people, more than half indicated in a show of hands that their companies have asked them to take over the management of departmental client/server systems in the past year. The speaker followed up by asking how many had a good handle on the hardware, software and support costs of their distributed LANs. Five people raised their hands.

Like moths to a flame

After three years of discussions, Compaq and Oracle will bring clustering to the PC server realm by the beginning of May, according to sources close to Compaq. Compaq started talking to Oracle about Digital-killing PC server clusters in 1992, and the two proved particularly loquacious. The clustering announcement will also see Compaq introduce a new line of servers, the sources said.

Debbie Reynolds: real or virtual? The Virtual World chain of virtual reality theaters has opened up one of its so-called "digital theme parks" in Las Vegas, right on the tourist-encrusted strip. "Travel to another dimension," the sign promises. But they seem to be missing a point here. Everybody in Las Vegas has already traveled to another dimension. Who needs a virtual world on the screen when you're standing in the middle of one? You want pyramids? Las Vegas has the Luxor. You want a volcano? Try the Mirage. You want fossils? Check out most of the entertainers. You want news? Read Computerworld! *You've got tips? Call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474.*



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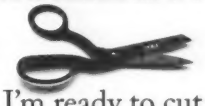
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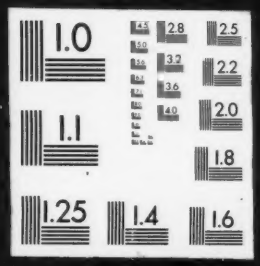


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